

# aircraft

## ILLUSTRATED

**'Air Europe Six Seven Zero'  
Canberra long-range testing  
The Canadair CL-215**



**RAF black wing schemes  
'Red Arrows' in colour**

# AIRSHOW 81

**preview and programme**





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1981 is our 4th season as suppliers to the Red Arrows. This year we have again supplied all their publicity stickers, plus the beautiful new 'Eclat' badge, the Red Arrows crest as approved by HM Queen. These specially commissioned crests are now carried on the team's Hawks — an indication of the quality maintained throughout our work. In 1981, our bright red 'Red Arrows' sales unit will again be appearing at Air Shows throughout the UK. We hope you will come and inspect the wide range of quality aviation souvenirs and collectors items on offer. There will be the usual full choice of Red Arrows Team Souvenirs, plus some new items. Remember our good name is your guarantee of authenticity and quality.

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The original Aggressors, 64th Fighter Weapons Sqn. This patch available in UK and Europe only from Bill Brookes Aviation Sales. Price £3.50 each.

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### AIR SHOWS 1981

A full list appears elsewhere, but at the time of closing for press, we anticipate being at the following displays with our trade stand.

#### MAY:

10th Staverton, 16th/17th Biggin Hill, 21st Brawdy, 23rd/24th Mildenhall, 30th Waddington.

#### JUNE:

14th Church Fenton, 21st Nottingham, 27th/28th Greenham Common.

#### JULY:

4th Locking, 5th Chicksands.

#### AUGUST:

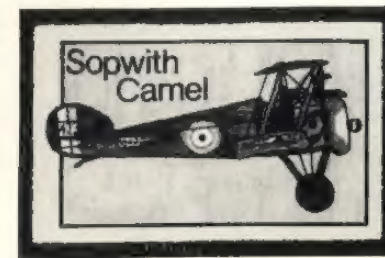
1st Yeovilton, 12th St Mawgan, 15th Valley, 16th Fairford, 27th Chivenor, 29th Peterborough, 30th Leicester.

#### SEPTEMBER:

12th Abingdon, 19th Finningley, 23rd Yeovilton.

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# aircraft ILLUSTRATED

May 1981 Vol 14 No 5

Editor Martin Horseman  
Contributing Editor Peter R. March  
Assistant Editor Allan Burney  
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Wendy Tyler  
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**Cover:** A welcome and colourful newcomer to the airshow scene last year was Robert Lamplough's AT-16 Harvard IV/385, seen here overflying Mildenhall and piloted by Alan Laurie. The aircraft, c/n 4-538 and registered G-BGPB, is finished in RCAF markings and forms half of the Harvard duo — the other participant being FT229. Now based at Duxford, 'Papa Bravo' is ex-Portuguese AF 1747 and ex-German AF 53-4619.  
*Photo: Aviation Photographs International*

**Frontispiece:** A moist day at Innsbruck airport in February with Tyrolean Airway's Dash 7, OE-HLS, during turnround. The airline operates scheduled passenger flights linking Innsbruck with Vienna and Zurich.  
*Photo: Ronald Heron*

**This picture:** Sea Harrier FRS1, XZ493/001, of newly re-commissioned No 801 Squadron (note the unit's emblem on the tail) just prior to becoming airborne on a ski-jump take-off at RNAS Yeovilton on 26 February. *Photo: Denis J. Calvert*

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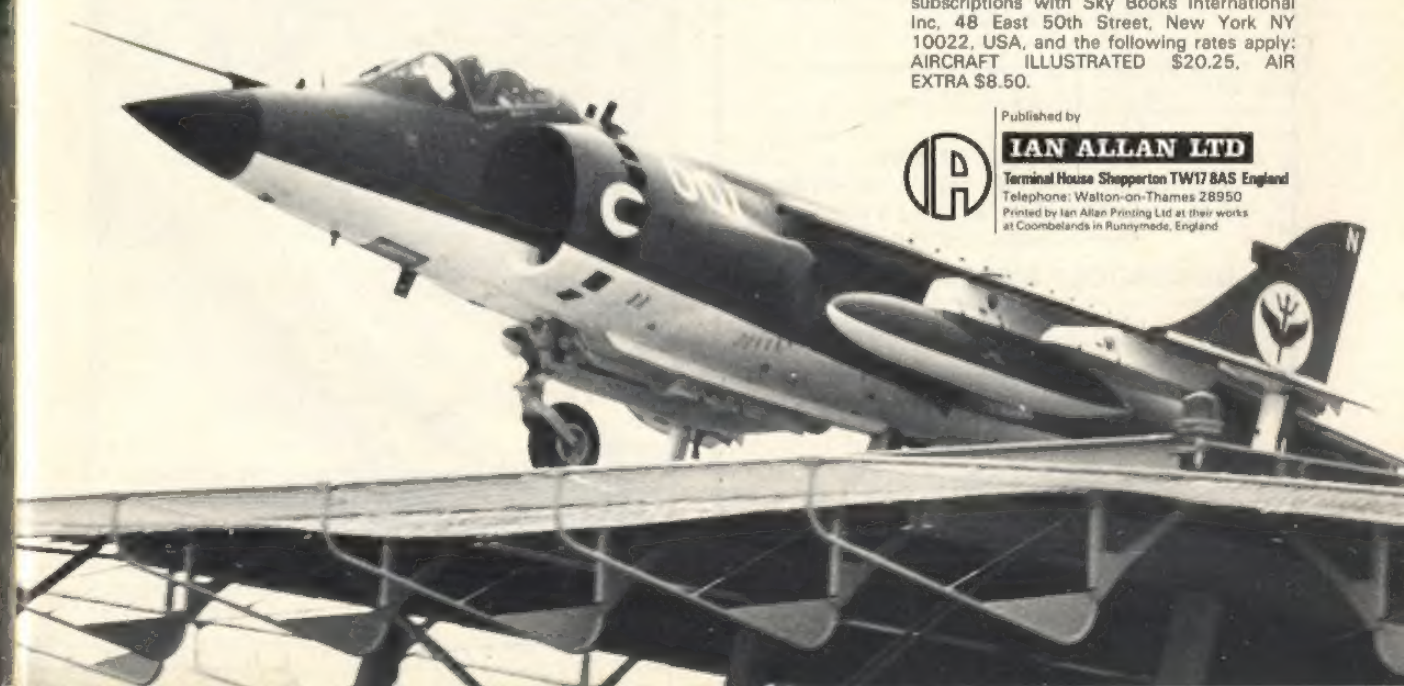
This issue of *Aircraft Illustrated* contains our annual preview and events listing for the forthcoming air display season. In accordance with last year's coverage, 'Airshow 81' can be found on pages 199-200 and 233-239, thus allowing, if you wish, the extraction of the 16-page section at the front and back of the issue while retaining the staples to keep it bound together. It is hoped that the events listing will constitute a handy reference and news of subsequent developments in the season's calendar will be regularly featured in the 'airview' column of the magazine along with an advance monthly re-cap — *Ed.*

*The Editor is pleased to receive contributions in the form of articles, letters and photographs. Items accepted will be retained and paid for at standard rates on publication; those he is unable to use can only be returned if they are accompanied by a stamped addressed envelope, otherwise they will be filed for possible future use.*

*Material, either commissioned or freely submitted, is provided at the contributor's own risk and Ian Allan Ltd cannot be held responsible for loss or damage.*

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## Join the Red Arrows Fan Club

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# AIRSHOW 81

## Peter R. March previews the forthcoming season of air events

DESPITE ALL the economic gloom, cutbacks in defence expenditure and the seemingly never-ending rise in the cost of flying, the 1981 air events season seems to be shaping up very well. By mid-March over 150 provisional dates for events in the British Isles had been notified, ranging from the PFA fly-ins, museum open days and balloon meets to the big shows of the year at Biggin Hill, Mildenhall, Greenham Common, Leicester and Cranfield. All tastes and interests will be catered for in a busy season which starts in mid-April with a Jodel Fly-in at Popham, near Winchester, and concludes with the traditional closing flying day at Old Warden on 25 October. Between these dates there is no weekend without an air event somewhere in the UK or Eire.

As usual the main historic aircraft collections have organised special flying events during the summer months. Shuttleworth Flying Days begin on Easter Monday and continue through to October with displays on the last Sunday of each month. Additional flying evenings will be held on 6 June and 4 July. This year the Comet, G-ACSS, will be on public view in the Old Warden workshops and it is hoped that the 'Afghan' Hawker Hind, BAPC-78, will be in the air for the first time. The Roe Triplane, BAPC-1, and English Electric Wren, BAPC-11, will be rejoining the performers this year. At Duxford the Imperial War Museum opens its gates for the 1981 season on 15 March and with the exception of 17 April and 4 May will remain open until 1 November. Local flying days have been arranged for 3 May and 11 October, a vintage flying day on 14 June and the main flying display of the year on 6 September.

With the 50th anniversary of the Schneider Trophy victory in September this year it is not surprising that this should be commemorated by special events and exhibitions. At Thorpe Park, Chertsey there will be a special Schneider display of replica aircraft presented by Leisure Sport when the Park opens for the season on 12 April. The S-5 flying replica, N220/G-BDFF, will be much in demand, appearing at Thorpe Park's own flying days on 25 July, 22 August and 26 September, the special display at Calshot on 13 September and IAT 81 at Greenham Common in June. The latter

MAY 1981



event will also be the only occasion this year that the Leisure Sport replicas give their full WW1 dog-fight display sequence.

The 'Red Arrows' start their UK performances with an Easter display at Sywell, Northants and then have a very full programme for the next 5½ months. This year, however, they have had an even earlier start to their season with a tour of the Middle East in March, during which they gave more than a dozen displays. The 'Red Arrows' will, of course, be appearing at the growing number of RAF Open Days, starting with Brawdy on 21 May. The team will also be giving its usual seaside shows in July and August.

The Royal Navy will be without a jet aerobatic team this year as the 'Blue Herons' have been stood down. Is it in deference to the age of the aircraft or the pilots? No doubt the Navy's growing strength of Sea Harriers will make up for the loss. The RN Historic Aircraft Flight will again be much in evidence, not only at the naval air station's own shows but at many of the other events. Yeovilton, Somerset will be the location for the Fleet Air Arm's main display of the year on 1 August.

Although the Army Air Corps would normally have held its bi-ennial Air Day at Middle Wallop this July, it has been deferred until 1982 as next year will be the 25th anniversary of the Corps; a major silver jubilee display has been provisionally fixed for 23-25 July 1982. The Army Air Corps will be participating in air shows on

Above: This year marks the 50th Anniversary of the Schneider Trophy victory and to commemorate the occasion several events and exhibitions are planned. A special display of replica Schneider aircraft will be presented by Leisure Sport at Thorpe Park, but the star attraction will undoubtedly be its S-5 flying replica N220/G-BDFF — seen here in the capable hands of Keith Sissons. Photo: Peter R. March

a limited scale this year, including Biggin Hill and Greenham Common.

Three USAF Open Houses are scheduled for 1981 with the major one being the two-day Air Fete at Mildenhall on 23-24 May. Coming just before the Paris Air Show it can be anticipated that there will be something dropping in en route from the USA to Le Bourget. Other bases to open are Upper Heyford on 18 July and Fairford on 16 August. The USAF is of course the occupant of RAF Greenham Common and will be giving its usual excellent support to the International Air Tattoo on 27-28 June. This event, billed as the World's Major Military Air Show of 1981, will include a special Sea Search Meet and competition which starts on 24 June. Maritime aircraft will fly a competition route around the coast of southwest England and SAR helicopters will fly to Bowood House near Calne, Wilts, where they will take part in rescue and other contests. The Sea Search aircraft will be on static display at IAT 81 the following weekend. More than 20 overseas



air arms will be taking part in the daily 7hr flying display including, it is hoped, aerobatic teams from France, Italy, Portugal and Switzerland.

followed by various other strut activities at Barton, Middle Wallop and even a cross-Channel fly-out. Hot air balloons are likely to be seen at many events during the year, but the biggest summer gathering is likely to be the Bristol Balloon Fiesta at Ashton Park on 4-6 September.

Strathallan on 13-14 July. Let's hope that most of these treasures collected by Sir William Roberts remain on this side of the Atlantic.

The tragic accident at the Biggin Hill event last September, and the subsequent controversy, has led to a number of meetings of air display organisers and participants to try to introduce a method of eliminating the dangers of accidents involving aircraft and spectators at airshows. It was decided that there was a need for an organisation to be set up to co-ordinate and advise on airshow safety. In the words of AVM Peter Latham, AOC No 11 Group RAF 'unless some form of professional body is established to improve standards at airshows there is a possibility of legislation which might unduly restrict the mounting of future events'. With the agreement of all but one of the major airshow organisers (who wanted Government control!), it was decided that a European Branch of the International Council of Air Shows should be set up and its first tasks should be to draw up a constitution for this ICAS branch, look at the possibility of drawing up a proposal for a common set of UK flying display regulations and co-ordinate the certification of airshow participants. This is obviously a very desirable step forward in improving safety at airshows in the UK which should re-assure the public that this aspect of the organisation of air events is receiving the proper attention.

**airscan**

FOR THOSE enthusiastic aerophiles who continuously seek information about the world of aviation, there is a wealth of popular and informed publications which regularly meet their demands. But, in addition to these magazines available on bookstalls, there is another unsuspected source of quite detailed information about the world's airlines and air routes.

Its publisher is Thomas Cook, the travel agent, and its Aviation News, a simple four-page production, is packed with information. Fares, weights, aircraft, routes, dates, services, finance — they're all included. No pictures, just fact-packed pages.

The most recent copy to cross my desk included information about revised free baggage allowance for Club Class passengers between London and Amsterdam — useful for diamond merchants; new British Airways services to Western Canada — of interest to cowboys; British Caledonian's and Gulf Air's non-stop run to Dubai — vital for high-speed sheiks; free in-flight entertainment on Swissair — a yodel-a-minute for skiers; a low-fare structure by Air New Zealand on its Hong Kong-Auckland route — a must for holiday-making sheep farmers; and a SAS-Thai International association to fly you around the world for 'only £730' — essential information for anyone with that amount of loot wanting to circumnavigate the globe.

And that's not all. There are details of express trains whizzing at 20min intervals between downtown Manhattan and New York's J. F. Kennedy International Airport; of an express service introduced by Avis to slash the time required to hire a car at airports; and of an international language centre where businessmen and professional people (whatever that means) can undertake a crash course in any one of a range of foreign languages.

If you're a regular airline user, then this little publication is a must on it's own; read in conjunction with other aviation publications and it helps to add another dimension to the routine civil aviation news which, generally, they cover so well.

On earlier occasions, we have deplored the way in which Britain is being taken for a ride, in its own aircraft, the wrong way down the non-existent two-way street which is alleged to be forming the basis of trans-Atlantic defence business between the UK and the USA. The latest example is the way the Pentagon and Capitol Hill have been at work with rumours that the two countries are trying to work a deal for the US Navy to buy the Hawk to meet its VTX requirements — if the RAF will adopt F-18s!

This particular bit of kite-flying was shot down in no uncertain manner by the Under Secretary of State for the RAF, Geoffrey Pattie. Far from the proposed Hawk purchase being a *quid pro quo* for RAF F-18s, Britain regards the matter of seeing Hawks in US Navy service as being only a part of the offsets for many of its earlier purchases of US equipment, which have not resulted in parallel and equal business coming eastbound down the two-way street. When taxed with this inequality in defence equipment deals, your average US politician will point to the recent contracts covering the supply of Britain's Rapier ground-to-air missiles to defend USAF bases in the UK. But this scheme, however welcome, is pretty small beer and is regarded by Mrs Thatcher's government and the Ministry of Defence as only a small step down the street.

The much vaunted Memorandum of Understanding, signed by the US and UK Governments some three years ago, was intended to balance the interchange of arms deals between the two countries by promoting the purchase of British systems and equipment not matched or available in the US. But, so far, there is very little evidence that Uncle Sam has been shopping in John Bull's supermarket. Indeed, the US has recently pulled out of a jointly-funded anti-airfield weapons system development programme being carried on by Britain's Hunting Engineering.

C. G. Grey, that redoubtable aviation journalist and editor of yesteryear, once said that one of his prime requirements for new civil aircraft was that they should 'land slowly and not burn up in a crash'. Lord Brabazon, another total aviation personality of the glorious past, was so keen on the development of safer aviation fuels that he once offered to stand in the middle of a ring of JP4 wide-cut aviation fuel and have it ignited if the protagonists of more volatile fuels would do the same sort of thing with their go-juice.

Both of these giants of British aviation would have applauded and supported the work being carried out by a group of dedicated research workers at ICI Paints Division on the development of aviation fuel additives which can cut the risks of fire in a crash. Using the thixotropic non-drip paint technology — which has already benefited all of us DIY fans — ICI has created an additive which reduces, by up to 30%, the chances of fire<sup>4</sup> caused by the ignition of the fuel fog which arises after an aircraft's tanks have been ruptured on impact.

Both the Royal Aircraft Establishment and the Federal Aviation Administration in the USA have been studying jointly this problem for several years, and ICI has been involved with this important work since 1968. If such an additive can be produced economically in the required quantity, and ICI estimates that 300 million barrels/year will be required in the Western world alone, then substantial investment in new plants will be required very soon in a number of countries.

This is an interesting reversal of the pattern in which advanced aerospace technologies have benefited other industries.

*Compiled by* **Peter R. March**

12 Popham, Hants: Jodel Fly-in  
12 Thorpe Park, Surrey: Opens for 1981 season  
12-13 East Fortune, Lothian: Museum of Flight Open Days  
19-20 Sywell, Northants: Air Display  
20 Old Warden, Beds: Shuttleworth Flying Day  
20 Compton Abbas, Dorset: Easter Fly-In  
26 Henstridge, Somerset: PFA Wessex Strut Spring Fly-in

- 2-3 Little Snoring, Norfolk: BAeA  
Elwyn McAully Trophy
- 3 Duxford, Cambs: IWM Flying  
Day
- 3 Finmere, Bucks: Vintage Aircraft  
Club Gemini Patrol
- 3 Barton, Gtr Manchester: PFA NW  
Strut Fly-in
- 3-25 Greenham Common, Berks:  
Gliding Championships
- 4 Stapleford Tawney, Essex: Air  
Display
- 8-9 Kidlington, Oxon: CSE Open Days
- 9 Shanklin, IoW: Red Arrows  
display
- 9-10 Holbeach St Johns, Lincs: Flower  
Fly-in
- 9-10 Middle Wallop, Hants: PFA  
Andover Strut Fly-in

- 10 Popham, Hants: British aircraft Fly-in
- 10 Staverton, Glos: RAF Innsworth Air Display
- 16-17 Biggin Hill, Kent: International Air Fair
- 17-19 East Fortune, Lothian: Museum of Flight Open Days
- 21 Brawdy, Dyfed: RAF Open Day
- 23 Lympne, Kent: PFA Cross-Channel Fly-out
- 23-24 Mildenhall, Suffolk: USAF Air Fete 81
- 23-24 Eglinton, Co Derry: Fly-in and Air Rally
- 23-25 Boston, Lincs: Vintage Aircraft Club Spring Camp

Continued on page 233

AIRCRAFT ILLUSTRATED



Two comparative photographs that provide a dramatic demonstration of the ability of ICI's anti-misting additive to reduce the fire risk of aviation fuel during crash landing. The view below left illustrates a test firing using ordinary aviation fuel on a high-speed sled at RAE Farnborough and (below) the same test with the anti-misting additive in the kerosene. *Photos: ICI*





## airnotes

Thunderbolt Ltd of Oswestry has received a firm order for its AS80 airship design from hot air balloon operator, Lighter Than Air Ltd, who has commissioned the airship on behalf of Peter Stuyvesant. The Thunderbolt AS80 airship is unique in that it uses hot air to achieve lift and therefore eradicates the risks associated with hydrogen and the costs of helium in airship operations. It has accommodation for 2-3 and is powered by two engines; the propulsion unit driving the propeller and a second engine to pressurise the hull.

Fourteen British Airways Super VC10s are to be bought by the RAF. The aircraft will be used to provide spares for the RAF's fleet of 13 VC10 C1s and nine VC10 K2 tankers (the latter are currently being modified to the standard at BAe Filton).

Orders have recently been placed for over 250 Rolls-Royce Spey turbofan and Dart turboprop engines for civil operators. The purchases cover engine deliveries during the next two years to power over 120 aircraft for executive use and short-haul airline routes. The engines ordered include the Spey Mk 511-8 for the Gulfstream III with deliveries into 1983; RB183 Mk 555-15 engines to be delivered up to

October 1982 for the Fokker F28 Fellowship; and Dart RDa7 turboprops for the BAe 748 and Fokker F27 Friendship.

The Sultanate of Oman has become the 51st country to buy the Lockheed C-130 Hercules transport. The aircraft, a C-130H, was delivered in March and the contract also includes crew training, spares, technical support and ground equipment.

The first two McDonnell Douglas F-15J Eagles ordered by the Japan Defense Agency were scheduled to be flown to Japan in late-March, following completion in the US of an F-15J engineering evaluation conducted by the Japan Air Self-Defence Force (JASDF). McDonnell Douglas is manufacturing 14 F-15Js as part of the 100-aircraft Japanese programme; under license agreement Mitsubishi Heavy Industries will build the remaining 86 aircraft. The JASDF plans to form the first F-15J unit by 1982.

The second Bell 222 for the London Metropolitan Police (LMP) was handed over on 25 February 1981. Sir David McNee, commissioner of the LMP, accepted the helicopter from Bell president James F. Atkins in official ceremonies at Bell Helicopter Textron, Fort Worth, Tx. CSE Aviation, Bell's UK sales representative, will carry out installation of

**Above: The first Boeing 747 for a Brazilian carrier, Combi PP-VNA for Varig Airlines, flies over Puget Sound shortly before its delivery in January. Varig is scheduled to take delivery of three of the type this year and the aircraft will operate on US and European routes. Photo: Boeing**

specialised equipment for the LMP's Bell 222, which will include a Marconi Avionics Heli-Tele camera system, a Decca Tans F12 computer display navigation system, a rescue hoist, loud hailer system, cargo hook, night floodlight system etc.

Caledonian Airmotive, the Prestwick-based aero engineering organisation which is part of the Caledonian Airways Group of Companies, has been awarded a £2.3million contract to overhaul General Electric CF6-50C engines for Hapag Lloyd's fleet of A300 Airbuses.

The Forest Service of the US Department of Agriculture has awarded a contract to Beech Aircraft Corporation for the production of four Beechcraft Baron 58P twin-engine aircraft. Delivery of the Baron 58Ps is scheduled for July 1981 and will provide the Forest Service with a fleet of 16 of the type.

The first of the UK-manufactured fuselage sections for the United States Marine Corps' Advanced Harrier AV-8B programme, has been delivered by British Aerospace to the United States. It is built to the full production standard and will be mated at the McDonnell Douglas plant in St Louis, Mo to the other fuselage sections. This first AV-8B sample will be utilised for airframe static strength tests; the maiden flight of the first of four new-build AV-8B Advanced Harriers is scheduled in October in St Louis, following final assembly, ground testing and calibration of instrumentation.

● Rolls-Royce has delivered the first of eight Pegasus vectored-thrust engines for the AV-8B programme to McDonnell Douglas. The powerplant was delivered in March ahead of schedule.

The government has announced that because of the limited trial flying carried out at RAE Farnborough, the Defence Ministry can no longer justify keeping the airfield open and that it will subsequently be put up for sale in 1985. It is hoped that the site will be developed as a business aviation airport for London and that it will continue to be the venue of the biennial SBAC International Airshow.

British Aerospace Dynamics Group has been chosen to continue development of a passive infra-red surveillance system for low-level air defence. Since 1975 the company has spent some £3million on the programme which is designed as a low cost solution to complex electronic countermeasures likely to be used by a future enemy. The passive surveillance system has no detectable emissions and it will therefore help to keep the location of anti-aircraft systems hidden.

## Airline Orders

Airline	Aircraft	No	Ordered	Delivery date
Alldair (Inter City Airlines)*	Shorts 330	2	25 Feb 81	Apr & May 81
	Shorts 360	2-f 2-o	25 Feb 81 25 Feb 81	m 83 n.d.
Altair Airlines*	Fokker F28 Mk 4000	3	9 Mar 81	m 81
Frontier Airlines*	DC-9 Super 80	3	5 Mar 81	Jun 82
Monarch Airlines	Boeing 737-200	2	Feb 81	e-82
Pelita Air Service*	Fokker F28 Mk 4000	1	12 Feb 81	Oct 81
Swedair*	Saab Fairchild 340	10	Feb 81	c-Jul 84- May 86
US Air*	Boeing 737-200	15-f 5-o	10 Mar 81 10 Mar 81	c-Nov 82
	Boeing 737-300	10-f 10-o	10 Mar 81 10 Mar 81	c-Dec 84

## Notes

### Airline Orders

**Alldair:** (Inter City Airlines) The East Midlands-based airline is the third customer — and the first UK operator — to adopt the new Shorts 360, which makes its maiden flight later this year and is scheduled to enter commercial service before the end of 1982. In conjunction with the acquisition of the new aircraft and plans for re-organising the group with a greater emphasis towards commuter operations, Alldair has adopted a new name — Inter City Airlines. With this purchase, orders and options for the Shorts 330 now stand at 77 from 25 airlines in 11 countries.

**Altair:** The order by the Philadelphia-based airline, brings total F28 Fellowship sales to 171 to 45 operators in 30 countries.

**Frontier Airlines:** Primary scheduling of Frontier's DC-9 Super 80s will be on high density routes, including the airline's service between Denver, Las Vegas and John Wayne Airport in Southern California. The aircraft will accommodate 147 passengers in single-class seating.

**Pelita Air Services:** Indonesia-based Pelita is a subsidiary of state oil company Pertamina.

**Swedair:** The Saab Fairchild 340 34-seat commuter airliner is scheduled to make its first flight in mid-83. The aircraft will be used mainly on the carrier's domestic services.

**US Air:** This significant order from US Air launches the new Boeing 737 variant — the turbofan powered -300. The fuselage of the B737-300 will be 8ft 8in longer than the standard -200, and the type will be powered by General Electric CFM56-3 engines. The new -300 will also have 6ft of span added to the horizontal tail and small wingtip extensions with mass balance probes to ensure the heavier plane rides smoothly — the longer body allows for three more rows of six seats each and a half row of three seats. Even though the CFM56s will be mounted ahead of the wing and higher, the nose gear strut will be lengthened to aid ground clearance of the nacelle because of the larger engine diameter. The new -300 has about 80% commonality with the present -200.

## Airline Deliveries

Airline	Aircraft	No	Delivered	Date ordered
Aires SA*	EMB-110P1 Bandeirante	2-f	Feb 81	n.d.
Air France*	Airbus A300B4-200	1	5 Feb 81	9 May 79
Laker Airways*	Airbus A300B4-200	1	17 Feb 81	10 Apr 79
Lufthansa*	Airbus A300B2-100	1	19 Feb 81	n.d.
Singapore Airlines*	Airbus A300B4-200	1	24 Feb 81	9 Apr 79

## Notes

### Airline Deliveries

**Aires SA:** The Colombian commuter airline will initially utilise the aircraft on routes connecting Bogota to Neiva, Ibague, Florencia and Medellin. In addition to the two Bandeirantes, Aires SA has also signed Lols for a third aircraft (to be delivered in Aug 81) and an EMB-120 Brasilia.

**Air France:** The Airbus is registered F-BVGO and is the airline's 18th example.

**Laker Airways:** Delivery of the airline's 2nd Airbus in the order for 10 reported in July 79, p309. The aircraft is registered G-BIMB. (An article on 'Laker's new AIRBUSINESS' appears on p212 this issue — Ed.)

**Lufthansa:** The aircraft is registered D-AIAF.

**Singapore Airlines:** The airline's 2nd Airbus in an order for six (see Apr 81, p153 and June 79, p256) is registered 9V-STB.

## Key:

n.d.—no details, e—early months of year, m—mid-year, c—commencing date, f—firm orders, o—options, Lol—Letter of intent, \*—see notes.

**Below: The latest single-seat variant of the F-15 Eagle, the 'C' model, is now being delivered to the 36th TFW at Bitburg AB, Germany. This F-15C is the wing commander's aircraft — which is appropriately serialised 79-0036. Just discernable on the port fin are the three colour stripes (blue, red and yellow) that denote his rank and on the inner of the starboard fin is a dark blue band with a pale grey Eagle. Photo: P. A. Rowlings**





Compiled by A. J. Wright

FOR A change there are several items worthy of mention in this latest batch of allocations. The marks given to the Cub, c/n 11163, were not allotted way back in 1946, so at least G-AGVV is not a reissue. However the first Tiger Moth produced by the Shipdham company has not received a vintage identity, instead a current in-sequence registration has been issued. The aircraft is one of the batch acquired from India. Air Europe has adopted G-DDDV for its latest Boeing 737 which was originally expected to carry G-BMMP. The Pilatus P2 is an interesting first for the UK register, coming from the Swiss AF where the type has been used as a two seat trainer for some years.

Registration	Type	C/n	Owner or operator
G-AGVV	Piper L-4H Cub	11163	A. Taylor & ptnr (F-BCZK/43-29872)
G-BIFD	Commander 114	14233	D. H. MacDonald (SE-GSG)
G-BIGH	Piper L-4H Cub	12052	Cormak (Aircraft Services) Ltd (F-BFQV/OO-GAS/OO-GAZ/44-79756)
G-BIHZ	BAe 167 Trainer	368	British Aerospace Public Ltd Co
G-BILA	Dalotet DM185 Viking	165/01L	R. Lamplough (F-PPZE)
G-BILH	Slingsby T-65C	1942	A. R. Bradley & ptnrs
G-BIMV	Sukorsky S-61N	61815	Management Aviation Ltd
G-BIND	Rallye 235	13328	G. Archer
G-BINH	DH82A Tiger Moth	OU/06/68	Arrow Air Services (Engineering) Ltd (VT-DOW)
G-BINJ	Rango NA-12 balloon	MRH-15	M. R. Haslam
G-BINL	Scuggs BL-2B Wundaballoon	81216	P. D. Ridout
G-BINM	Scuggs BL-2B Wundaballoon	81217	P. D. Ridout
G-BINV	Saffery S200 balloon	1	R. S. Harris
G-BINW	Scuggs BL-2B Wundaballoon	81218	P. G. Macklin
G-BINX	Scuggs BL-2B Wundaballoon	81219	P. D. Ridout
G-BINZ	Rango NA-8 balloon	SBG-14	T. J. Sweeting & M. Davies
G-BIOA	Hughes 369D	1200880D	Weetabix Ltd
G-BIOC	Cessna F150L	0848	T. E. Abell
G-BIOK	Cessna F152	1810	W. H. & J. Rogers Group Ltd
G-BIOM	Cessna F152	1815	Rogers Aviation Sales Ltd
G-BIOP	Scuggs BL-2D balloon	81229	J. P. S. Donnellan
G-BIOR	MS880B Rallye Club	1229	Nolson Aviation Ltd (OO-SAF)
G-BIOS	Scuggs BL-2B Wundaballoon	81220	D. Eaves
G-BIOT	Bensen B-8M	AJB-1	A. J. Bundark
G-BIOX	Potter Crompton PRO-2 balloon	01	G. M. Potter



Left: A registration featured in this column in the April issue of *Aircraft Illustrated* was G-PORR, carried by Colt Executive Aviation's AS350B Ecureuil. The aircraft is seen here arriving at Staverton on 25 February. Photo: Peter R. March

Registration	Type	C/n	Owner or operator
G-BIOY	PAC-14 Special Shape balloon	03	P. A. Cremer
G-BIOZ	Rotorway 133 Executive	2962	G. Meech
G-BIPB	Weedhopper JC-24B	0478	E. H. Moroney
G-BIPC	PAC-14 Hefferlump 200 balloon	02	P. A. Cremer
G-BIPD	BN-2A-21 Islander	2026	Pilatus Britten-Norman Ltd
G-BIPE	BN-2B-27 Islander	2031	Pilatus Britten-Norman Ltd
G-BIPF	Scuggs BL-2C balloon	81225	D. Morris
G-BIPG	Global Mini balloon	01	P. Globe
G-BIPH	Scuggs BL-2B Wundaballoon	81224	C. M. Dewsnap
G-BIPJ	PA-36-375 Pawnee Brave	7802064	G. B. Pearce
G-BIPK	Saffery S200 balloon	26	P. J. Kelsey
G-BIPL	AA-5A Cheetah	0858	Cabair Ltd (N26980)
G-BIPN	Fournier RF-3	35	P. F. Whitehead & J. Marriot (F-BMDN)
G-BIPP	Beech 200 Super King Air	88-878	Eagle Aircraft Services Ltd
G-BIPR	Sukorsky S-76A	760154	Bristow Helicopters Ltd
G-BIPS	MS880B Rallye 100ST	3028	P. A. Shenton & D. P. Griffiths (F-GBCA)
G-BIPW	Avenger T200-2112 balloon	10	A. F. Longhelt
G-BIPX	Saffery S9 balloon	JRH-001	J. R. Havers
G-BIPY	Bensen B-8	AJW-01	A. J. Wood
G-BJET	Cessna 425	0024	Northair Aviation Ltd
G-BOAG	Concorde 102	014	British Airways (G-BFKW)
G-BRIX	PA-32R-301 Saratoga	8113030	Taylor Maxwell & Co Ltd (N8319S)
G-BYRD	Mooney M20K	25-0507	Express Aviation Services Ltd (N97310)
G-COTT	Cameron 60 balloon	887	Nottingham Building Society
G-DDDV	Boeing 737-253	22633	Air Europe Ltd
G-FALC	FBL Falco 3	224	P. W. Hunter (G-AROT)
G-FOUX	AA-5A Cheetah	0818	Cabair Ltd (N8488H)
G-GROW	Cameron N-77 balloon	705	Derbyshire Building Society
G-HIFI	PA-28R-201 Arrow III	7837214	First Class Furniture Ltd (G-BFTB/N9652C)
G-HOTS	Thunderbolt AS-80 balloon	320	Thunder Balloons Ltd
G-JIMS	Cessna 340A-III	0722	Granpack Ltd (G-PETE/N2667N)
G-LINT	Pitts S-1S Special	09-10628	P. L. Moss
G-MAXI	PA-34-200T Seneca	7670150	Leisure Aviation (N8658C)
G-MAYO	PA-28-161 Warrior II	7716278	Ashfronts Ltd (G-BFBG/N38848)
G-METB	Bell 222	47055	The Metropolitan Police
G-NOTS	Cameron Special Shape balloon	711	The Balloon Stable Ltd
G-OMHC	PA-28RT-201 Arrow IV	7918105	M. H. Conobey (N3072Y)
G-PCUB	PA-18 Super Cub 135	18-3674	M. J. Wilson (R-184 RNethAF)
G-PENI	Hughes 369D	1100832D	Yewlands Engineering Ltd (N1108V)
G-PTWO	Pilatus P2-05	600-03	B. J. S. Grey (U-110 Swiss AF)
G-WOLL	G164A AgCat	797	Norfolk Aerial Spraying Ltd (G-AYTM/N6555)
G-ZEIZ	Learjet 36A	047	Royco Homes Ltd
G-ZONE	Learjet 35A	365	Jointair Ltd

# Canberra

## long-range testing



Roland Beamont concludes his trio of articles on the Canberra flight test programme

IN THE summer of 1952, the B Mk5 variant of the Canberra was on test at Warton. This prototype, VX185, was basically a B Mk2 with a 'wet wing' incorporating leading-edge fuel tanks extending back to the main spar, and the latest Rolls-Royce RA7 engines of 7,500lb thrust to cope with the planned increase in all-up weight to 50,000lb.

After some preoccupation with fuel 'waxing' under the cold-soak conditions of extended cruise at the tropopause — a problem which had not affected the Canberra B Mk2 in which all the main fuel was carried in the three fuselage tanks and well insulated from the cold — long-range proving flights began. These involved progressively longer sorties to establish not only range capability but also systems reliability and oil and oxygen consumption rates over 4-hr at 40,000-50,000ft.

After a while flying round and round the British Isles began to seem rather repetitive and a suggestion was put forward that some more realistic experience could be gained by doing some of the range flying in a more or less straight line. Gibraltar might be one practical possibility or alternatively Gander in Newfoundland or Goose Bay in Labrador. Of these the 1,800 miles to Gander was a suitable sector distance for the tests with adequate reserves for diver-

sion, and this became the focus for planning.

At this point, since with average westerly headwinds the outbound sector was going to take about 4hr 30min and the return sector up to one hour less, we suggested that there was no point in hanging about and that we should come back the same day; and this was where the news media became interested!

The Royal Aero Club was anxious to

Top: The Canberra BMk5 prototype, VX185, arrives at Aldergrove on 24 August 1952 in preparation for its double trans-Atlantic flight (to Gander, Newfoundland and back) the next day. All photos via the author

Above: The crew of VX185 in front of the aircraft at 05.30hrs on the morning of the record breaking flight; from left to right, Peter Hillward, 'Watty' Watson and the author.





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Above: The ground crew wipe early morning dew off the canopy of the Canberra prior to start-up on 25 August 1952.

observe the flight for record purposes but said that as it had to be between capital cities according to their rules, we should have to do Belfast-St Johns. So, as they would not accept our proposition that Preston was the capital of the Northwest and because the St John's runway was too short anyway, a good British compromise was determined. We would take off from Aldergrove and overfly Gander to Gander Lake which was considered by the RAEC to be the equivalent distance to St John's.

Now the battle was on because although we thought we were merely carrying out the next interesting stage in the test programme, everyone else seemed to think of it only as some sort of magic as 'the double Atlantic flight'. Of course this had never been done before, but to many thousands of ferry pilots in the war and many hundreds of airline pilots since, the Atlantic crossing was scarcely magical in their 10-12hr one-way stints. So we felt it necessary to keep a sense of proportion.

The working-up trials proceeded well in typical Canberra fashion, and then on 21 August we made a final triangular proving flight; from Warton to the East Atlantic weather ship, then to Manston and on to the Orkneys and back to Warton — a distance of 1,200nm in 3.05hr. During this flight, which proved mechanically uneventful, most of the first 1 1/2 hr to the westerly turning point weather ship and back up-Channel over Cornwall, was flown in sight of a massive electrical storm build-up with a giant 'anvil' head which was well above our cruising height of 44,000ft as we penetrated its turbulent top layer over Devon. This evil-looking black and yellow cloud mass below was constantly illuminated by flashing lightning

and was one of the most violent storm scenes in my experience. On landing back at Warton the first news was coming in of the Lynmouth flooding disaster in which the town was being partly washed away with much loss of life as we flew overhead at 44,000ft.

But the tests on VX185 were complete and go-ahead was given for the Atlantic sortie. With Peter Hillwood as second pilot who would fly the return leg and Dennis Watson the company chief navigator, we positioned the Canberra at Aldergrove on the evening of 25 August 1952. The forecast for the following day indicated reasonable landing weather at each end and an average headwind west-bound of 40kts or so which was acceptable.

I briefed the Press who were now present in large numbers, and arranged for a 06.30hrs take-off the following morning. At 04.00hrs the weather briefing had almost inevitably changed, and while Gander weather was likely to stay open, frontal activity was now expected to affect Aldergrove later in the day. Of more significance however the Atlantic system now showed promise of 60-70kts headwind at a high tropopause level of 40-41,000ft over much of the route. 'Watty' Watson confirmed that any height gain above the tropopause could be expected to reduce the effective headwind by 5kts/1,000ft, and so knowing the altitude capabilities of our aircraft I decided to go, especially as the forecaster could only suggest worsening conditions over the next few days.

Watson had to get down to revising the navigation plan, but there was insufficient time before we had to go out on schedule to crew the aircraft, and he completed it after take-off. In the cold, misty dawn on

the aerodrome, visibility was adequate though poor and we could appreciate the local law that 'if you can see Lough Neagh it's going to rain and if you can't it is raining!' Working our way through the crowds of Press, company engineers, Service officers and other well-wishers we were already hot and uncomfortable in our heavy high-altitude flying gear by the time we had settled into our stations and shut the entry hatch. Immediately on this cold, high-humidity morning the canopy steamed over completely and this caused some problems after start-up when taxiing before the demisting hot air system, which was never a strong point in Canberras, began to take effect.

Final systems checks on the runway were all satisfactory and at 06.34hrs, 4min late on schedule, I began the take-off roll at an aircraft weight of 47,355lb of which 23,672lb was fuel. After a quick 360° turn at full power, course was set at 06.35hrs at 400kts over the RAEC timing point on the runway and the aircraft pulled up to climb at full power/400kts into cloud at 800ft, breaking clear eventually at 34,000ft. The technique used was a 400kts climb to Mach 0.76, continuing at full power to the Mach 0.76/weight ceiling, and then stabilising a cruise-climb at max continuous power at Mach 0.76. This was commenced after a shallow descent from the full-power ceiling, and levelled initially at 42,700ft/Mach 0.76/212kts. Maintain-





Left: A Royal Aero Club timer starts the epic flight and ...

Below left: ... the aircraft accelerating to climb speed 400kts towards Lough Neagh — destination Newfoundland.

Right: After a short turnaround at Gander, Canberra VX185 taxis-out at the airport to begin its return flight to Aldergrove.

Below: The reception committee at Aldergrove for the arrival of VX185 — 10hrs after departure.



ing Mach 0.76 we concentrated on keeping the absolute weight-ceiling for this condition, using max continuous power for each 1hr and then combat power for the permissible period before returning to max continuous.

By 07.46hrs, the cruise had reached 45,000ft and as we could expect to be benefitting from the falling wind gradient (but had no means of positively establishing this!) we increased speed to Mach 0.775. Wing leading-edge fuel was consumed to 100/100gal first to eliminate risk of usable fuel loss by 'waxing' and the

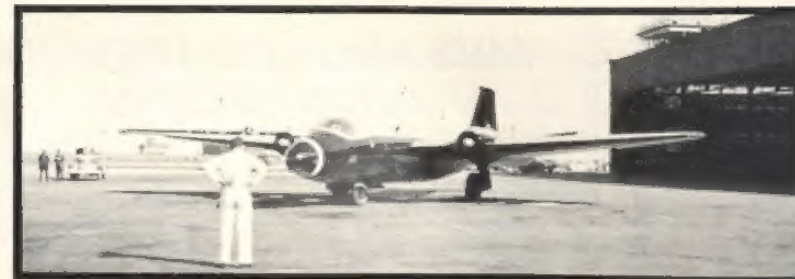
established fuel drills were operated satisfactorily throughout the flight.

It was at an early stage that we found that navigation facilities were going to be meagre, with the failure of Loran APN9, API MkII and AMLI MkIV. This left the compass, VHF, a trial installation radio compass and the navigator's pencil, and with only sporadic radio compass bearings and in the event no help on VHF from the two Atlantic weather ships, Watson was

quite occupied for the first 1,500 miles! The autopilot had also become unserviceable so the whole operation was hand-flown, but the fine handling qualities of the Canberra enabled this quite demanding cruise-climb to be flown with precision and an average steering accuracy which caused unusually complimentary remarks from the navigator to the effect that 'it's nice to see the course held to  $\pm \frac{1}{2}^\circ$ !'. This I thought wasn't bad considering that the navigator's plan allowed for  $\pm 20$ nm error at landfall if uncorrected!

46,000ft was reached at 08.33hrs, and we were still flying in the grey dawn light with an unbroken cloud layer below us at about 40,000ft, and it was cold in the cabin. There was no turbulence, the cloud horizon ahead was sharp-edged against limitless visibility, and the Canberra with engines quietly humming at max continuous power was precisely balanced in trim and needed no more than finger tips on the wheel to keep it steady on climb-speed and course.

We had failed to get VHF contact with the first weather ship and had achieved only fleeting radio compass bearings insufficient for a reliable running fix, so that good contact with the second ship, 'Ocean Station Coca' about 600nm east of Newfoundland, was becoming important.



Watson raised radio compass contact at about 150nm but it was again intermittent and insufficient for a reliable fix. Estimating passing within 90nm to the north of it we hoped to obtain VHF contact and a radar fix, but were again disappointed. However I continued to call on VHF without effect until a voice suddenly replied saying he was Air Canada Argonaut flight 531 and that he could not raise 'Coca' either, but could he help. I replied saying no thanks but it was nice to talk to somebody. Then he said 'Canberra, is that right that you are turning right round at Gander and going back to UK?'

We thought 'fame at last — he's been reading the papers', and I confirmed it. There was a pause and then his mid-Atlantic voice said 'Gee — what a helluva way to spend a day!' as he ploughed on eastwards somewhere down below in all the weather.

So we continued on our way in the clear at 47,000ft, now holding level and allowing Mach number to build up to Mach 0.8 as the fuel weight dropped.

Then at 09.55hrs Watson raised St John's beacon  $20^\circ$  on the port beam for long enough to establish a running fix which put us only slightly north of planned track. However assuming that with the known weather system the wind would

tend to back and give any cross-track error to starboard, a  $5^\circ$  port course alteration was made at an estimated 300nm out from Fogo Island.

On reaching the planned let-down point at 200nm estimated from Gander, breaks began to appear in the cloud cover ahead with golden dawn sunlight now on it and as we nosed down through the cirrus at 38,000ft and Mach 0.81; land could just be seen on the horizon ahead.

A further port course correction brought us to land-fall approximately 16nm north of track and so on over the rocky and conifer landscape of Newfoundland to the wide expanse of the ex-military airfield of Gander, converting limiting Mach number to the IAS test limit of 500kts over the last few miles down to 500ft over the Gander Lake, where sure enough we found the small motor boat containing the Royal Aero Club official observer!

Peter Hillwood had come forward from his ejection seat in the navigator's compartment and, standing by my right shoulder to see our arrival, had an interesting experience of the airframe buffet at limiting Mach when not strapped-

in or supported in any way — a procedure which would be somewhat frowned upon today! Throttling back over the deep blue lake we curved back into the airport circuit enjoying briefly the endless visibility of this morning-sun-lit Newfoundland scene, and touched down at 11.12hrs BST for a recorded point-to-point time of 4.34hr.

The ever enthusiastic and efficient English Electric support party took over the aircraft, and our hospitable hosts insisted on taking the crew some miles off the base for a 'relaxed meal'. This was enjoyable for Hillwood and Watson while I stayed at the Terminal briefing office to study the forecast and clear our return flight plan. Eventually catching up with the lunch party (breakfast time for the Gander people), I had just started on a massive steak when the phone rang to report 'VX185 ready for flight'.

Another perilous dash down dirt roads among the towering fir forest and we were soon shutting the hatch in our cockpit, by now heated to oven level by the clear early morning August sun. Just at this point a car drew up with a squeal of tyres and with much gesticulation we were clearly being asked to open the hatch again. When this was done a face said 'you can't go away without a present from Canada', and in came three large packages each containing a whole smoked salmon. Then with these highly aromatic items stowed on the floor





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as there was nowhere else for them we started engines, this time with Hillwood at the wheel.

The Met briefing coupled with our out-bound experience had confirmed the tropopause height and jetstream, and so for this sector I had decided to fly a similar great circle plan but this time levelling at 41,000ft and cruising with benefit of a high average tailwind at Mach 0.8 initially and higher as the fuel weight reduced.

Taking off at 13.10hrs BST after this longer-than-intended turnaround we set initial course for Gander Lake to overfly our patient RAeC observer at 500kts straight into a max power climb on the first heading on course for UK. The weather was sparkling clear and gave a magnificent view of the lakes and coastline in the Canadian morning sun as we climbed towards the line of cloud still on the eastern horizon where we left it earlier in the morning.

Estimated time for this sector announced by Watson as he finished his calculations soon after take-off was 3.30hr, and this time we were to benefit from positive navigational checks. Running ADF fixes were obtained on St John's, both weather ships and on Bush Mills in Ireland, so that we were able to fly an accurate track and also confirm that the jetstream was helping us to the tune of 130mph for a time. Watson began to predict a fast time and once again the Canberra was performing perfectly.

At the end of the second hour Mach 0.805 was being maintained level at 7,000rpm and 42,000ft, and during the third hour speed was increased to Mach 0.81 at 40,000ft using 7,300rpm. Without the need to cruise/climb at the weight ceiling there was no need to use max continuous power after the first hour, or combat power at all, to maintain this high cruising speed.

A significant change in this sector was the sun relationship. On the flight out the sunrise had not caught up with us sufficiently to warm the cockpit by solar

radiation, and all the crew had become uncomfortably cold. But on this sector which started with a hot cockpit and the sun on the starboard beam the first hour was comfortably warm. However on an easterly heading at a ground-speed averaging at times over 600mph the sun disappeared rapidly behind our starboard wing and after two hours was providing very little warmth for us! This was our first experience of sustained jet speeds 'away' from the sun and of the very short eastbound day soon to become normal experience to jet airliner travellers, and it was fascinating to have left the early-morning sun at Gander and to be descending towards UK with a late-afternoon sun behind us, only 2½hrs later.

The last hour had been through the turbulent tops of high cloud, and at 150nm out good VHF bearings were obtained from Aldergrove which enabled us to monitor Nutts Corner beacon signals and plan a fast letdown through reported unfavourable weather to a safe cloud-break over Lough Neagh, hopefully to avoid a slow GCA procedure approach. This worked out well and Hillwood broke cloud in rain and low visibility with 5 miles to go to Aldergrove, which we were cleared to cross immediately at low level for RAeC timing. Landing in a downpour of rain at 16.39hrs BST the flight from Gander had taken 3.26hr point-to-point for 1,818nm and had consumed 1,747gal of fuel.

The total round journey, including turn round, had taken 10hr 3min, and VX185 was in fully serviceable condition except for the failed navigation equipments and did not need refuelling for the short flight home through the rain over the Irish Sea which we made as soon as we could decently disengage from the throng of Press and wellwishers at Aldergrove.

On landing back at Warton at about 18.30hrs BST after what had been quite a busy day, there was a small but enthusiastic group including our wives on the tarmac — small because it was after

working hours and in the Northwest we keep things in perspective, and enthusiastic because as we now learned the media had been active all day and even the BBC had broken into programmes with bulletins on 'where the Atlantic flyers were' — we were glad they thought they knew, because much of the time we didn't!

After a couple of truly British awkward and understated speeches we began to talk over the technicalities of what had been a significant technical achievement by any standards.

My subsequent report was to summarise it:

'Canberra B Mk5, No VX185, was flown from Aldergrove, Northern Ireland, to Gander, Newfoundland, and return to Aldergrove on 26 August 1952 in 10hr 3min elapsed time.

'Operating conditions were satisfactory throughout in respect of controllability, aircraft and engine serviceability and seat comfort.

'Cockpit heating was found to be inadequate in these conditions and would clearly be inadequate for night operation.

'The scale of navigational equipment carried would have been adequate if it had all remained serviceable.

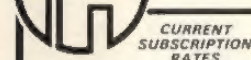
'In this aircraft hand-flying over long distances is a pleasant and relaxed activity...'

During the discussion with managing director Freddy Page and chief engineer Don Crowe and others someone came in with a buff envelope and said 'it's for Mr Beaumont'. I said thanks and put it in my pocket. Later as the meeting broke up I remembered the envelope and opened it — it was a telegram from the Queen.

**Below: The Canberra BMk5 prototype, VX185, painted-up for the Farnborough display immediately after the double Atlantic flight. The nose of this aircraft is now in the Science Museum, South Kensington.**



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Photo report by  
Martin Horseman

LAKER AIRWAYS introduced its first A300B Airbus to the holiday travel trade in January 1981 with a series of inaugural flights from Gatwick, Manchester and Berlin to Palma, Majorca during which the airline took the opportunity of underlining the business and passenger appeal of its latest acquisition.

Describing the A300 as the *Crème de Toulouse*, Sir Freddie Laker billed the aircraft as positively the finest in its class, bringing a new standard in comfort and in-flight entertainment to the travel trade. 'The Laker A300', said the company chairman, 'is the biggest airline draw in the holiday business today and we are the No 1 European holiday operation by a very wide margin'. The introduction of the Airbus could not have come at a more appropriate time: 'The 1981 summer is fantastic, the best year we've ever had — in Europe and North America we're 60% up on last year', he continued.

The aircraft which flew the inaugurals, G-BIMA *Metro*, is the first of 10 Airbuses ordered by the airline, which has the option of taking the last four as A310s rather than A300Bs. The Laker Airways' version of the latter is

## Laker's new AIRBUSiness



the A300B4-203, this designation denoting the variant powered by General Electric CF6-50C2 engines with take-off thrust ratings of 52,500lb st. The second aircraft in the order was delivered in mid-February 1981, the third is due at the end of April, and three more are scheduled for delivery in 1982; three of the A300/A310s will arrive in 1983 and the 10th aircraft is expected in 1984.

The abiding impression of the A300 on the customers, of course, will be the wide-body cabin accommodation. Although the aircraft could carry 345 passengers in a single-class high density configuration, Laker Airways has opted for a 298-seat layout with a minimum 33in seat pitch providing plenty of legroom. Through most of the cabin the seating is nine abreast with two aisles, narrowing to seven abreast (2+3+2) in the rear seven rows but with appropriately wider aisles in the vicinity of the aft galley. Generously sized overhead baggage lockers run the length of the cabin on either side and the airline has also made use of the provision for a central double-sided rack of lockers — so there is more than adequate space for all the holiday souvenirs bought by returning passengers!



**Top:** Laker Airways A300B4 G-BIMA *Metro* on the ramp alongside Gate 21 at Gatwick on 22 January 1981 prior to one of the inaugurals to Palma, Majorca.

**Above left:** A view of the rear cabin showing the 3+3+3 seat layout on twin aisles and the four sets of overhead lockers.

**Left:** G-BIMA's flight deck during the night-time return flight from Palma to Gatwick, with the aircraft at 34,300ft and Mach 0.78 and routing back via Barcelona, Cognac and Guernsey.  
*Photos: Martin Horseman*

**Right:** The first Laker Airbus landing at Gatwick on 10 January 1981.  
*Photo: Graham Finch*

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## Buccaneering

Sir,

As a long-term fan of the Buccaneer, I was pleased to see the article on export versions of this aircraft published in the February 1981 issue of *Aircraft Illustrated*. I have also read the book from which the article was taken and can give it an unqualified 'three greens'.

Only one minor error was apparent in the chapter dealing with Buccaneer exports, and this concerns the delivery of aircraft by sea from Hull docks. The dates given are in fact those on which the ships sailed, not the arrival dates in South Africa. Aircraft Nos 421, 423, 424 and 426 left King George Dock aboard the SA *Van Der Stiel* on 5 August 1966, while Nos 411, 420, 422 and 425 were similarly despatched aboard the SA *Langkloof* on 17 October.

A further aspect of the Buccaneer story which has not, to my knowledge, appeared in print before, is the correct designation for the SMk2. Although the Buccaneer was given the company designation B 103, the NA39 and SMk1 were known as the YB3 in a numbering system devised by the SBAC. The latter was introduced shortly

after WW2, and comprised one letter indicating the aircraft manufacturer (Blackburn's was 'Y'), followed by A1 to A9, B1 to B9, etc. This system rapidly fell into disuse, but is perpetuated by Shorts with the SC 7 Skyvan, and SD3 30 Com muterliner.

Major changes on the Buccaneer S2 resulted in allocation of YB6 to this variant, and close examination of the air frame shows that all parts differing from the SMk1 have a stores reference prefixed 'YB6'. When what is now BAe Brough was made sister firm to McDonnell Douglas for the British Phantom, the designation YB8 was given to cover all necessary re-engineering work. Blackburn YB8 Phantom, whatever next?

PAUL A. JACKSON  
Enfield,  
Middlesex

## Gauntlet recollections

Sir,

I very much appreciated the article published in the January 1981 issue of *Aircraft Illustrated* on the Gloster Gauntlet by Kenneth Wixey. It helped to fill an obvious 'gap' in aviation history for that era.

It also reminded me of my period as Warrant Officer with No 2084

(Beamster) Squadron ATC in the 1950s. At that time the squadron possessed a complete Gauntlet which was regularly dismantled and re-assembled by the cadets on airframe instruction. Unfortunately I am unable to quote the serial number of this machine. During the same period we also had a Hurricane Mk IIC, complete with Merlin engine. Subsequently due to lack of storage space, the Air Ministry granted permission for both machines to be sold for scrap. With the benefit of hindsight such a move was nothing short of criminal! The Gauntlet alone would have commanded a small fortune today.

H. N. HILLIER  
Beamster,  
Dorset

## LUAS reunion

Sir,

The Liverpool University Air Squadron will celebrate its 40th anniversary at the Officers' Mess, RAF Woodvale on 13 June 1981. Any former members interested in attending the reunion dinner or seeking further details should contact the undersigned.

SQN LDR J. M. DOGGART  
RAF Woodvale,  
Formby,  
Merseyside L37 7AD

# Viscounts for BAF



## Alan J. Wright

ON 6 February Viscount 802, G-AOHV, was christened *Winn*, the name of the chief training hostess with British Air Ferries (BAF). The ceremony was performed by Mr Mike Keegan, who earlier had explained the purpose of the occasion.

For some time, BAF has concentrated on leases and charters for its 14 strong Herald fleet and much of this work is generated in the Middle East on oil related contracts. The need for aircraft with greater capacity, but at the same time remaining an economic proposition, prompted the airline to consider the Viscount. A successful approach was made to British Airways who had a number for sale, with the result that up to six of the type could find themselves exchanging storage at Rhoose for Southend and the livery of BAF.

The expansion has also allowed the airline to announce its plans to re-enter the IT market, offering the travel industry attractive rates to destinations in Europe. The range of the Viscount with maximum payload enables it to reach such places as Rimini, Nice, Oslo or Vienna with ease. Flight times are admittedly slightly longer than those of jet competitors, but the company is emphasising the benefits of Southend as compared with major air ports.

The first of the new fleet members was received on 16 January, whereupon a thorough overhaul and refurbishing programme was undertaken. The yellow, blue and white scheme appeared very attractive on G-AOHV, which carried the airline's



name on the port side, while the starboard displayed Oasis Oil Co in English and Arabic thus revealing the identity of its first customer. Indeed the aircraft was scheduled to fly out to Libya on 8 February to start its new duties. The second machine, G-AOHL, arrived in basic BA colours during the ceremony and was expected to be ready to join its sister ship by early-March. The third Viscount was scheduled for delivery on 20 February and will come from the remaining batch allocated to BAF, namely G-AOHM, G-AOYL, G-AOYS and G-APEX.

Although having averaged between 30,000-35,000hrs each, the aircraft have been well maintained even since their withdrawal in 1980. Careful sealing of vulnerable parts and regular engine runs has ensured little deterioration, which should

enable the aircraft to give several more years useful service. Given this good start, it is to be hoped that the Viscounts continue to be as successful with their new owners as they have been with the flag carrier.

**Above: ... the display of the Oasis Oil Co title in English and Arabic, thus revealing the identity of its first customer.**

Photos: Alan J. Wright and Simon Murdoch

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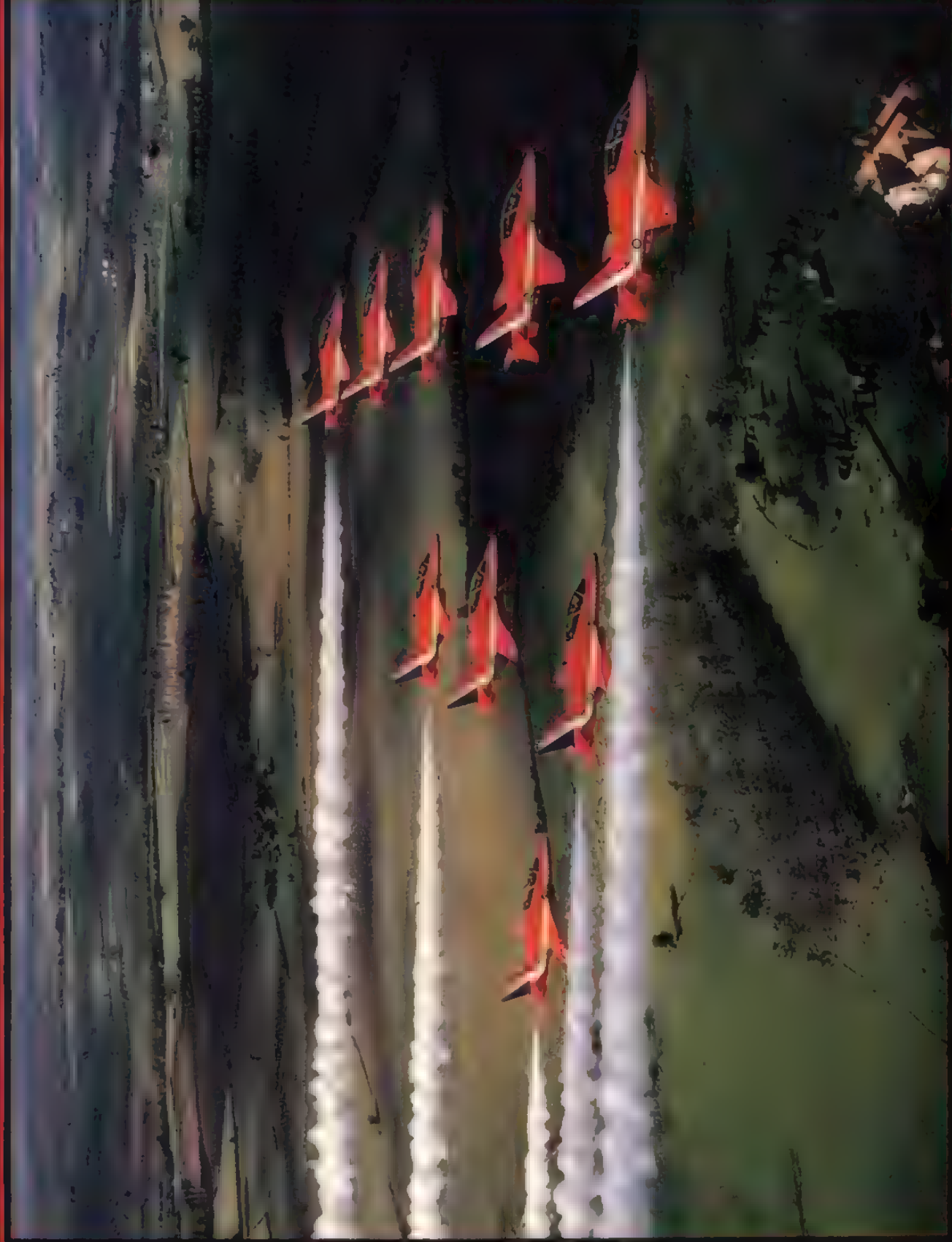
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# The 1981 Royal Air Force 'RED ARROWS'

Two views of a pre-season practice sortie by the RAF 'Red Arrows' on 10 February 1981; and providing the trailer for an article on the aerobatic team which will appear in next month's issue of Aircraft Illustrated. This picture shows the team pulling up to the top of a loop in 'wineglass' formation while the photograph below previews the new 'delta' formation being introduced into the 1981 display programme.

Photos: Allan Burney







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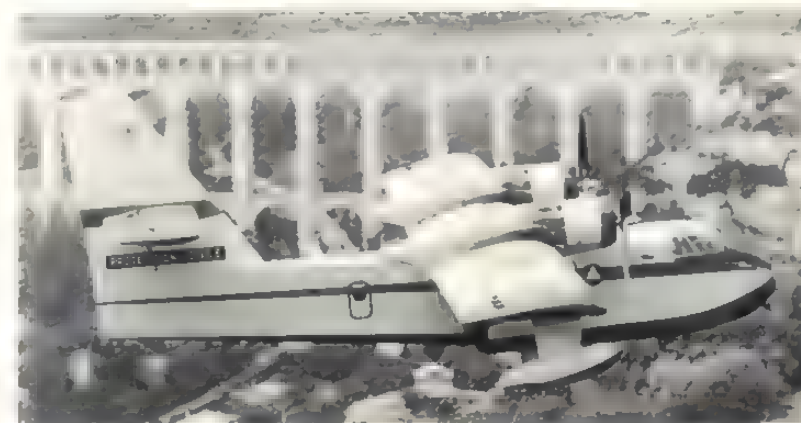
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# The Canadair CL-215

Salvador Mafé Huertas  
reports on the amphibian water  
bomber and its operations in Spain



Left: The countryside and architecture of  
southern France provide a distinctive  
backdrop for this French Canadair  
CL-215, F-ZBAX, of the Protection  
Civile; note the high-mounted wing and  
tailplane of the design typical of most  
amphibian aircraft. Photo: Canadair

customers will follow and, of course,  
repeat orders from current operators. But  
due to the increasing scarcity of high  
octane aviation gasoline and, within a few  
years, the spare parts for the R-2800  
engines, Canadair has already given con-  
sideration to a new variant with turbo-  
props. In fact some scale models have been  
made for test purposes and the alternative  
powerplant could be an attractive option in  
the near term. The first aircraft of this new  
version could be flying in 1984-85, or  
before but most important for existing  
operators is the prospect that the CL-215  
could be re-engined relatively easily, the  
thus modified examples in all probability  
securing an extension of their lifespan up  
to and beyond the year 2000.

In 1970, the Spanish government,  
motivated by the increasing threat from  
forest fires to the nation's timber resources,  
contracted with Canadair Ltd for the  
delivery of two CL-215s, which in  
February 1971 were taken on charge by  
the Spanish Air Force at Getafe air base  
near Madrid. The aircraft were operated  
initially by No 803 SAR Squadron; and in  
May of the same year, they participated in  
the first search and rescue mission, operat-  
ing from Sanuago airport (Pontevedra)  
and sweeping the Atlantic Ocean in search  
of survivors of a sunken cargo vessel. Two  
months later the first water drop over a  
forest fire was made in Galicia.

January 1973 saw the formation of  
*Escuadrón 404* to take over the operation  
of the CL-215, which had received the  
official Military designation of UD.13  
(utility amphibian). Later that year the air-  
craft transferred to the bigger Torrejón air  
base, also near Madrid, and in 1974 eight  
more of the aircraft arrived in Spain; these  
were the second batch, and they incor-  
porated a nose radome with a weather and  
search radar and the associated CRT  
display screen in the left flightdeck  
console.

During March-April 1975 two UD.13s  
were detached to the Canary Islands to  
form the fixed wing SAR cover for this  
area, as the Grumman Albatrosses of the  
locally based No 802 Squadron were stood  
down for technical reasons. Once the  
maintenance tasks had been completed,  
the CL-215s returned to the mainland.

DESIGNED AS A purpose built aircraft  
for fighting forest fires, the Canadair  
CL 215 emerged from Canadair's drawing  
office as an austere and classic amphibian,  
built like a battleship and able to withstand  
the rigorous pounding of water operations  
and low level flight over mountainous  
terrain. The construction go ahead with  
given in February 1966, the aircraft to be  
powered by two Pratt & Whitney R-2800  
Twin Wasp 18 cylinder radial engines,  
each rated at 2,100hp for take off, with  
three bladed Hamilton Standard  
Hydromatic constant speed full feathering  
propellers. There was no prototype of the  
CL 215 as such, and the first development  
aircraft, flew on 23 October 1967; it had  
the c/n 1001 and was aptly marked  
CF FEU-X (this aircraft was later  
delivered to France's *Service de Protection  
Civile* as F-ZBBR).

As a firefighter, the CL-215 can load a  
maximum of 1,176 Imp gall (5,347 litre) of  
water as it skims over the water surface in  
a lake, a dam or a sheltered harbour.  
Secondary roles for the aircraft are SAR  
work, aerial applications of chemical prod-  
ucts, maritime surveillance and transport  
duties.

The first deliveries were made in June  
1969, and up to early-1980 a total of 65  
machines had been delivered to the follow-  
ing countries.

Greece Eleven aircraft were delivered,  
starting in 1971, with the last two in early-  
1979. They operate with 30th Wing, Air  
Maternal Command, Hellenic AF based at  
Elefsis AB, and their duties range from  
fighting forest fires and SAR co-operation  
to utility duties and liaison work over the  
numerous islands in the Aegean Sea.

France Fifteen machines were acquired, of  
which 12 remain in service with the  
*Securité Civile* service (*Protection Civile*

before 1976) and operate both in the water  
bomber role (especially in the southern  
portion of France) and on search and  
rescue commitments. These aircraft carry  
French civilian markings but also have  
military type roundels on their wings.

Canada The government of Quebec  
acquired 15 CL-215s for forest fighting  
and also as aerial sprayers (operating only  
from May to September) and the first air-  
craft was received mid 1969 (c/n 1002  
C-FWWP ex-CF-PQQ).

The province of Manitoba has two of  
the machines on strength, and they are  
employed in the same roles as their  
counterparts in Quebec; the aircraft are  
c/n 1044 C-GAMF and 1065 C GUMW.

Canadair itself owns aircraft c/n 1049  
C GUKM as a demonstrator and for  
training the crews of its clients.

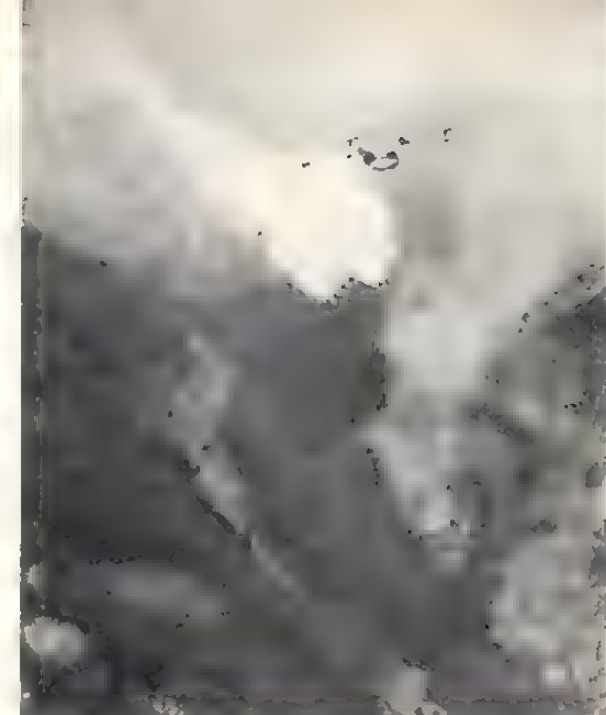
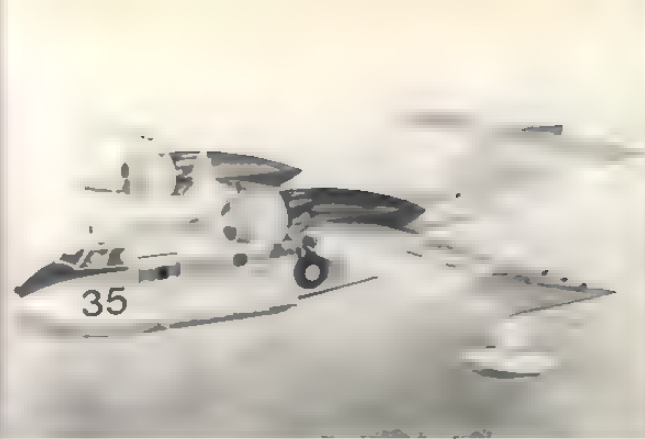
Thailand The Thai Navy operates two  
CL 215 c/nos 1058 and 1059 in the  
maritime surveillance and SAR roles, these  
aircraft having a nose mounted weather  
and search radar.

Venezuela Two were bought by CVG  
Ferrominera Orinoco CA from Puerto  
Ordaz, Venezuela. The first and to date the  
only CL-215s acquired by a private  
company, they are used as transports in  
development prospecting in the Orinoco  
river, and their registrations are,  
YV-O CFO 5 c/n 1062 and YV-O-CFO-6  
c/n 1063.

Spain Up to now, Spain has been the most  
important user of this amphibian, with 17  
aircraft delivered in three batches of two,  
eight and seven aircraft respectively, these  
being used by *Grupo 43* of the *Ejército del  
Aire*.

In late-1980, the CL-215 production  
line re-opened, with an order from the  
Yugoslav government for four machines  
for early-1982 delivery. No doubt other





**Top:** One of the *Gouvernement du Québec*'s fleet of CL-215s in service with the *Ministère des Transports*. This particular aircraft, CF-YXG/35, is fitted for spraying tasks — part of the spray bar can be seen under the left wingtip.

**Above:** Perhaps the most colourful CL-215s are the two aircraft operated by the Royal Thai Navy for maritime patrol duties — painted in a striking blue, white and red livery with day-glo panels.

**Above right:** A typical operational environment of the CL-215 water-bomber as it salvos its load of water on to a brush fire. *Photos: Canadair*

In the summer season, No 404 Squadron sends detachments to other air bases or civilian airports which are closer to forested areas with high fire risk, thereby ensuring shorter reaction times in the event of a call out. In addition to the summer detachments, in which all the aircraft and air and ground crews are held at dawn to sunset readiness, during the rest of the year an aircraft and crew is maintained on immediate alert at Torrejón home base.

Regrettably, the fire fighting operations of the CL-215s in Spain have not been

conducted without loss. In September 1976 aircraft 404 07/UD.13-07 was destroyed in a fatal crash during a forest fighting missions on Monte Xiabre in the Pontevedra province in northwestern Spain. On 7 March 1977, the CL-215, 404 09, suffered an accident in Fuenterrabia (Guipuzcoa) when it collided with some rocks while taxiing over rough water. The crew abandoned the aircraft safely although by then it was in a semi-submerged state. Assessed as recoverable the aircraft was later wrecked during attempts to lift it by crane. In April 1980 and in the course of a water scoop run in windy conditions at Valencia harbour, aircraft 404-08 started porpoising, overturned and sank in very short time — the crew all managed to escape with only cuts and bruises.

The last batch of seven CL-215s, arrived in Spain in early-1979, these being registered UD.13-11 to UD.13-17. May last year brought another change of unit designation as *Esc 404* was disbanded and *Grupo 43* was formed, this comprising two squadrons, Nos 431 and 432, with seven machines each. This strength was unfortunately shortlived as on Sunday, 12 October 1980 CL-215 s/n UD.13-13 was lost while helping to extinguish a big forest fire in Alicante province. In unknown circumstances, and just after taking on a new water load from a lake behind a small dam, the aircraft came into contact with the lake shore while taking off and crashed into some trees a short distance beyond. Miraculously the aircraft did not catch fire but the first pilot and the flight engineer were killed and the second pilot was badly wounded; the plane broke

in three parts, the tail section landing some 250ft from the rest of the wreck.

Up to late-1980 the *Ejército del Aire* CL-215s had registered some 25,000 flight hours. During fire fighting operations it is normal for a crew to fly continuously for up to eight hours and in some cases 12hr/day have been logged by individual crews. The support of the Group's maintenance personnel ought not to go unmentioned, their work sometimes being conducted without the benefit of servicing shelters and main base support. In all, the Spanish CL-215s have taken part in the extinguishing of more than 8,000 forest fires, having dropped about 400,000,000 litres of water in more than 60,000 drops.

The training activity for new crews posted to *Grupo 43* is conducted during the winter months, preparing them for the difficult task they will encounter the following summer. The aircraft overhauls, apart from those made at base level, are done at Madrid-Cuatro vientos air depot (engines) and at Albacete-Los Llanos (airframes).

#### Acknowledgements

The author would like to acknowledge the co-operation and facilities given for this article by the Spanish AF Public Relations Office, and all the help given by personnel of *Grupo 43*, especially Maj Moya and Maj Vazquez. Thanks are also due to Mr Geddes of Canadair Ltd.

#### In Memoriam

To the crews of  
'FOCA 07' and  
'FOCA 13'

**Above left:** UD13, s/n 432-10, seen just after take-off from Torrejón and heading towards the Entrepénas water dam some 100 miles northeast for a training session.

**Left:** A view of the aircraft on the water run — its entire load of some 5,300 litres can be scooped up in about 10 seconds while skimming across the lake surface. *Photos: S. Malé Huertas*



# RAF black wing identification schemes (part 2)



**James Goulding concludes his article on the identification schemes carried by RAF fighters in early-WW2**

IT HAS been mentioned in some books and articles that during the immediate prewar period, RAF fighters had their wing undersides painted in Night and pale grey, but there is no documentary or other evidence to confirm these reports and they are undoubtedly the result of a misinterpretation of observations. When the 'black and white' scheme was generally adopted some hundreds of biplane and monoplane fighters were hurriedly repainted, particularly so during the anxious, potential war situation of the Munich Crisis, and in many cases only a single coat of White was applied over the existing Aluminium paint — resulting in an off-white shade, which was corrected by a second application of White at a later date. Observers seeing Gauntlets, Furies, Gladiators,

Demons and early Hurricanes with a single coat of Night and White over the original Aluminium finish concluded that black and pale grey was the new official scheme, but all official documents refer only to Night and White ('black and white' in ordinary parlance) or Night, White and Aluminium when describing the scheme. The numerous camouflage and markings drawings issued by the aircraft companies and government correspondence, including the Dowding letters about the trial schemes, make it clear that 'black and white' was the intended paint finish. Modellers wishing to portray an accurate paint finish of the scheme carried by aircraft during the turbulent Munich era, could paint the undersurfaces of their models with an initial coat of silver before over-painting with a single coat of black and white, but after Munich and during the early war years, time permitted the true black and white shade to be used.

When the 'black and white' scheme was first widely introduced throughout Fighter Command during the latter part of 1938, some aircraft retained roundels under the

**Above: Sqn Ldr (later Wg Cdr) R. Stanford-Tuck in lead Hurricane, V6864, heads a No 257 Squadron section on take-off with V7137 (nearest the camera) and V6873. The Hurricanes in this late-1940 shot carry the black port wing under-surface.**

*Photo via the author*

**Right: New Hurricanes awaiting delivery in early-1940. The under-surface schemes are Night, White and Aluminium. Photo via the author**

wings in a variety of styles, not all of which were authorised. In some cases these were the Type B Dull Red and Dull Blue form, while others used the standard type. There were even cases when the roundel on the white side was over-painted as a black disc.

With the outbreak of WW2, most of the

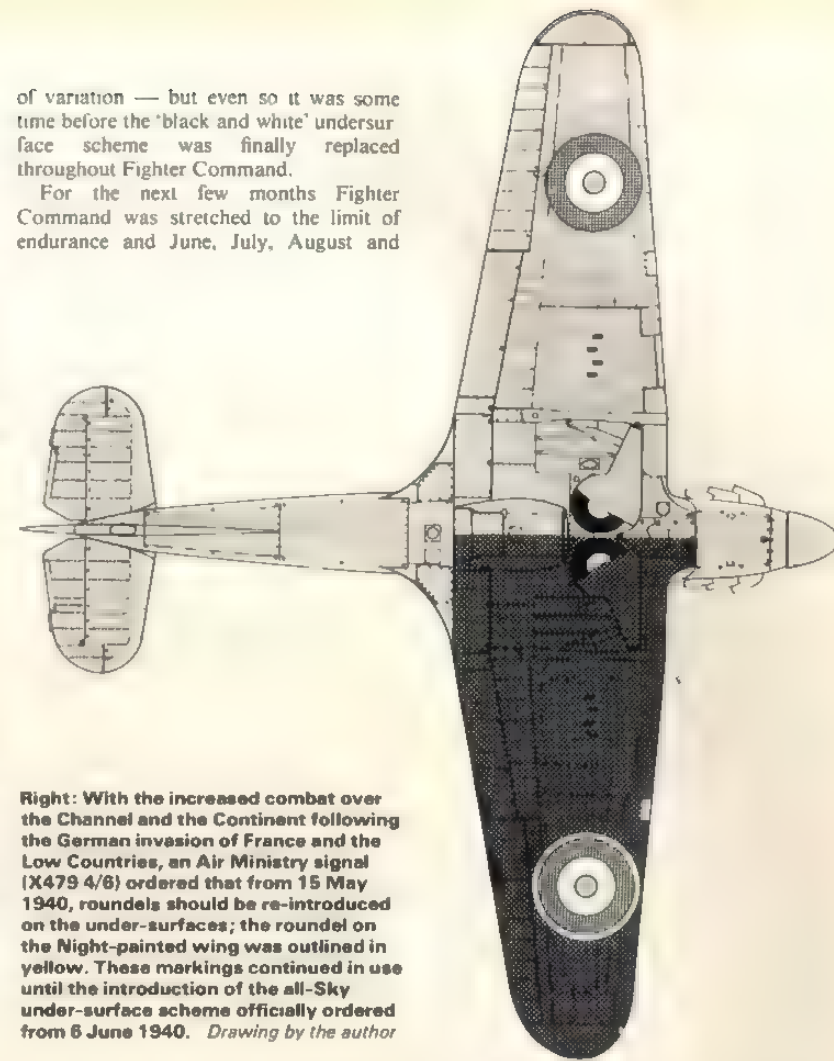
undersurface roundels and serials had been removed, but roundels were retained on Hurricanes and Gladiators based in France. Expecting intense fighting over the coast of France and Belgium following the rapid advance by German forces in the days after the invasion on 10 May 1940, Fighter Command re-introduced under wing roundels on their aircraft. A signal, X479/6, was sent by the Air Ministry to all Fighter Command units ordering these markings and adding that the roundel on the black wing should be outlined with a yellow ring. One report suggests that pale blue was also used for outlining the port roundel, but if this account is correct in stating that a colour other than yellow was also used in a few cases it seems more likely that the colour would have been Medium Sea Grey (which was used for code letters and readily available, and was sometimes misinterpreted as pale blue because of its bluish bias). The signal was sent on 15 May, and thereafter day fighters carried under wing roundels for a brief period.

The Night, White and Aluminium, or equally divided Night and White scheme was phased out of use after its official replacement by the new colour, Sky, which was ordered on 6 June 1940, but at first supplies of the new colour (known colloquially as 'duck egg blue' or 'duck egg green' in the Squadrons) were very limited and there were large numbers of Fighter Command aircraft to be painted, as well as the demands on supplies from the production factories. Attempts were made to mix the subtle new colour, particularly by squadrons, and this resulted in quite a lot

of variation — but even so it was some time before the 'black and white' undersurface scheme was finally replaced throughout Fighter Command.

For the next few months Fighter Command was stretched to the limit of endurance and June, July, August and

**Right: With the increased combat over the Channel and the Continent following the German invasion of France and the Low Countries, an Air Ministry signal (X479 4/8) ordered that from 15 May 1940, roundels should be re-introduced on the under-surfaces; the roundel on the Night-painted wing was outlined in yellow. These markings continued in use until the introduction of the all-Sky under-surface scheme officially ordered from 6 June 1940. Drawing by the author**





September saw intense air fighting over Southern England. But with the passing of what became known as the Battle of Britain, Fighter Command began to reconsider tactics and existing colour schemes. A majority of the experienced fighter pilots favoured a return to the 'black and white' identification scheme, which they felt had many advantages in combat. A total repaint of all day fighter undersurfaces from Sky back to the old Night and White scheme would have presented a massive task, especially as Fighter Command now had many more aircraft than at the start of the 'Battle of Britain'. It was therefore considered that only the port wing undersurface need be painted in black, with the rest of the undersurfaces left in their overall Sky finish. Further, it was decided to add two extra visual recognition aids — a Sky-painted propeller spinner and an 18-in wide Sky painted band around the rear fuselage. The black paint used under the port wing was not the standard Night finish, manufactured in either cellulose or oil-pigmented varnish, but a semi-permanent washable distemper, DTD441, which could easily be removed at short notice if the tactical situation made this necessary. As before, just prior to the introduction of Sky, roundels were to be carried under the wing tips and the one on the black wing was to be outlined in Yellow. In effect, all that was necessary was to paint the black distemper over the existing Sky finish on the port side, from the extreme wing tip inwards to the aircraft centre line, and painted around the existing roundel. The roundel was then outlined with a Yellow ring. Under-wing roundels were not used during the first two months after the change-over to Sky, but were re-introduced around the beginning of August.

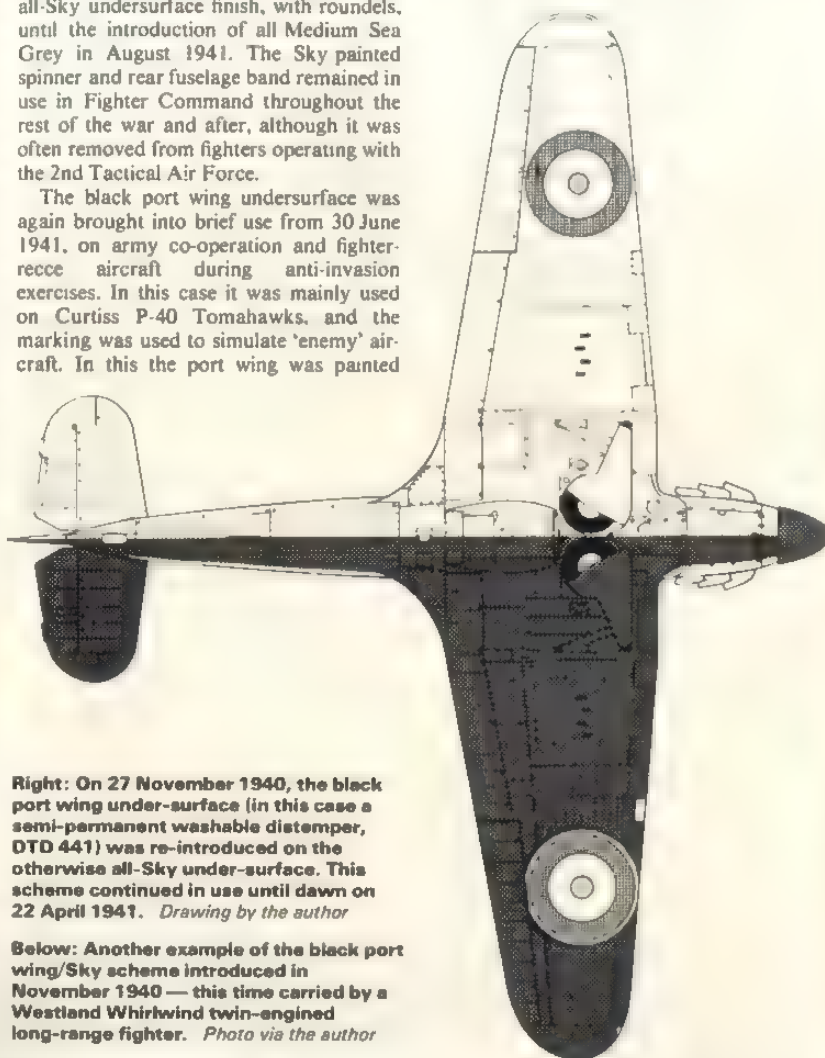
The new recognition aids were ordered to be applied to RAF day fighters of Fighter Command from 27 November 1940, and this combination of markings continued in use for 4½-months. On 7 April 1941, the Air Ministry sent Signal A279 to Fighter Command and associated Units ordering that from dawn on 15 April the black distemper should be removed

from the port wing undersurface. A further Signal, sent soon after, delayed this alteration in markings until 22 April, the reason not being disclosed. There may have been a tactical purpose for this delay, or a practical problem of available labour and materials for removing the black distemper.

After 22 April day fighters of Fighter Command reverted to the previously-used all-Sky undersurface finish, with roundels, until the introduction of all Medium Sea Grey in August 1941. The Sky painted spinner and rear fuselage band remained in use in Fighter Command throughout the rest of the war and after, although it was often removed from fighters operating with the 2nd Tactical Air Force.

The black port wing undersurface was again brought into brief use from 30 June 1941, on army co-operation and fighter-*reccé* aircraft during anti-invasion exercises. In this case it was mainly used on Curtiss P-40 Tomahawks, and the marking was used to simulate 'enemy' aircraft. In this the port wing was painted

black, probably in the washable distemper, and the rest of the undersurfaces were Sky. Again, the port wing roundel was outlined in Yellow, and the aircraft carried a black letter under the starboard wing. The 'friendly' aircraft had all Sky undersurfaces, and also with the black letter under the starboard wing. These markings remained in use for the period of the exercises, covering a few days.



**Right:** On 27 November 1940, the black port wing undersurface (in this case a semi-permanent washable distemper, DTD 441) was re-introduced on the otherwise all-Sky undersurface. This scheme continued in use until dawn on 22 April 1941. Drawing by the author

**Below:** Another example of the black port wing/Sky scheme introduced in November 1940 — this time carried by a Westland Whirlwind twin-engined long-range fighter. Photo via the author



# 'Air Europe Six Seven Zero'

## part 2

Martin Horseman

TEN FIFTY TWO hours BST, 2hr 15min outbound from Gatwick, and the Air Europe Boeing 737 still had more than an hour's flying ahead of it before reaching Funchal in the Madeira Is. We were five minutes past Asmar at 33,000ft on Upper Red 1, which made it some 150nm to run to the next waypoint, Veram, and then 300nm to Funchal. Almost the entire sector from the mainland to the islands is covered by VHF communications from Lisbon or Madeira Control but the only ground-based navigation aids over the concluding stages of the flight are the non-directional beacons (NDBs) at Porto Santo and Funchal, with ranges of 400 and 200nm respectively. So in the temporary absence of external references our progress was simply, but effectively, taken care of by the 'heading select' mode on the automatic flight control system; and with the digital display showing 230°, Flight 670 tracked steadily southwards towards the Madeiras at 7nm/min.

Off the port beam, the great scalloped curves in the coastline of Iberia ran past the Tagus estuary and the Bay of Setúbal towards the Algarve, and from there around the semi-circular Gulf of Cadiz. In front there was nothing to see except the sub-tropical panorama of sky and sea framed by the flight deck windows.

But the crew's thoughts were focussing further ahead on the arrival procedures at Funchal. The landing roll on the short, 5,249ft runway would be abbreviated by the use of auto-braking, explained Capt John Grant: 'As the aircraft touches down the system automatically puts the brakes on and this pitches the nose forward. I always brief the passengers about it because otherwise they would wonder what's going on. The auto-braking action hits as soon as you get a wheelspin above 60kts; we've got the option of selecting

minimum, medium or maximum application values — at maximum, the auto-brakes will stop the aircraft in about 2,100ft. We will roll rather longer than that, however, because as soon as it looks good I disconnect the system and brake myself. The landing from the threshold is only 5,050ft and from the TDZs it's about 4,000ft, which is not a lot in which to stop, so the auto-brakes help to avoid wasting any time — they're on before I've got reverse in! It's a little bit uncomfortable for the passengers, they're used to the gentle application of brakes, but it is the safe way... and, therefore, it is the best way'.

Very shortly thereafter, John Grant switched the conversation into the start of his landing brief:

'So initially, the airfield at Funchal; the obvious problem, we've all read the brief, is the shortness of the runway, the island airfield, the high ground here — a 6,000ft mountain only about 14 miles away — and although we're coming in this way the safety height is of the utmost importance. The MSH (minimum safety height) is 7,200ft to the west within 25 miles, 3,500ft to the east, and our company safety height is 8,500ft. We won't come below 85 until we are positively either overhead the beacon in the hold or we have the island on radar or visual — and we're absolutely sure about it'.

The hope was that we would be on runway 06 and that it would be a straight-in clearance to the downwind leg for a right hand turn and a visual approach. But if there was any prior inbound traffic, explained John, we would be held until it had landed; 'If he overshoots, he comes straight back to the beacon and gets right in our way so I'll brief the letdown and then if we have to do it, we'll be familiar with it'. The letdown procedure in reference to the Funchal NDB — the holding pattern, safety heights, altitude/visibility minima, procedure turns, approach headings and overshoot sequence — was covered in detail as was the contingency of a missed approach. 'Depending on the reasons we'll either try

again or we'll go to Porto Santo; or if that's out we'll go to Tenerife — there is adequate fuel as we have Tenerife reserves on. If the weather is good and there is somebody blocking us we can drop our reserves sufficient for Porto Santo'.

The briefing then moved on to the very particular wind features of our destination, 'I don't expect the winds to go above 15kts today, but obviously we can expect turbulence even in light winds'. The flap settings and speed selections during various phases of the approach were reviewed; if it was to be a landing on runway 24, 'there's not a lot of time to get everything dirtied up, so we will be fairly dirty coming in here (past the beacon), probably with 10° flap and gear down, and then turning in we'll drop 15° flap and then straight down to 30° and 40° flap'. For runway 06, on the other hand, the descent past the beacon would be taken at about 210kts clean, reducing to 190kts and 1° flap on the downwind leg — 'there's no point in burning up fuel if we're going all the way round' — and then, depending on the wind, into the base leg, curved approach path at about 170kts and 5° flap coming back to V<sub>AT</sub> + 15kts with everything set up at one mile to run.

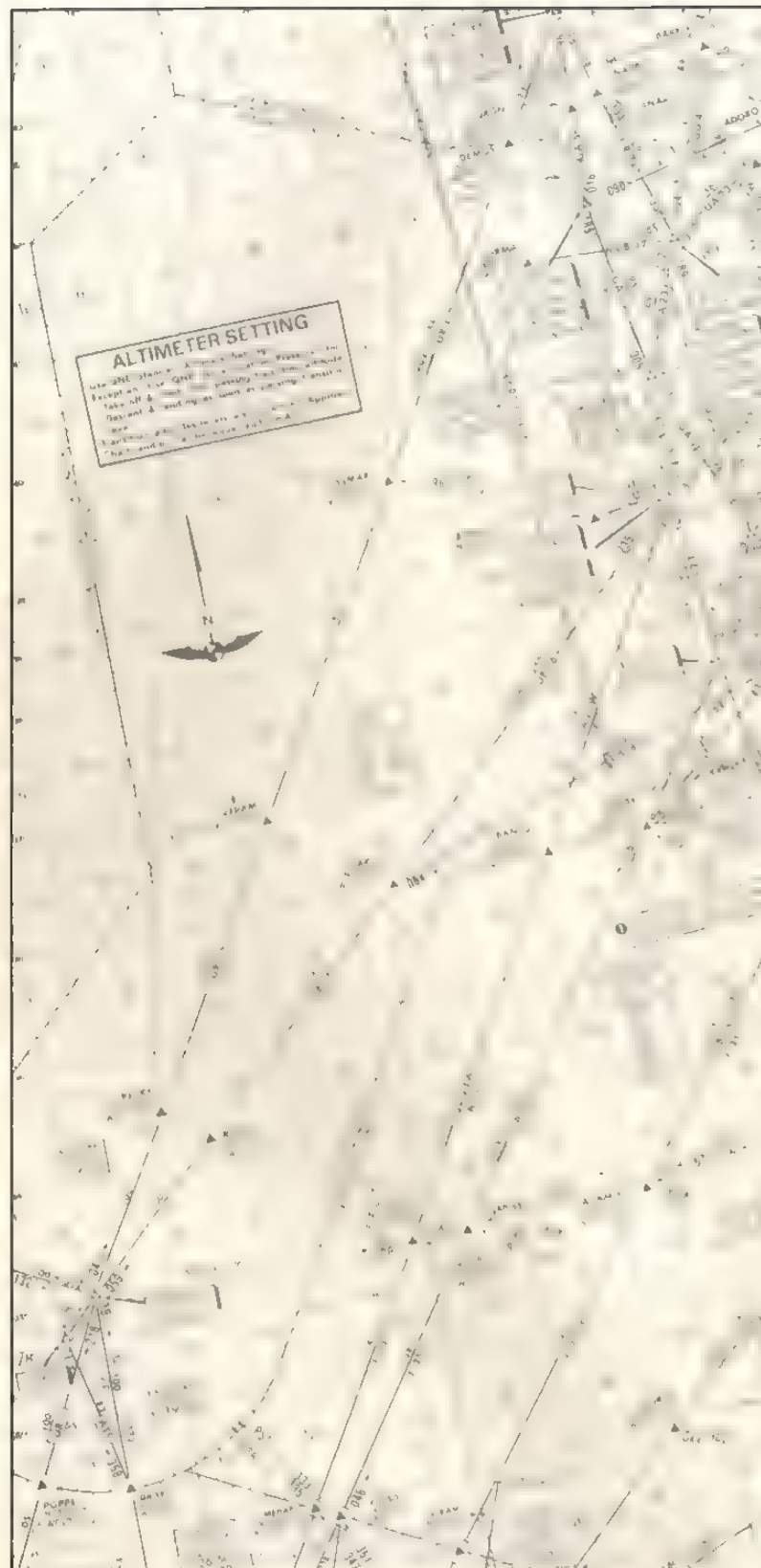
Reverting from 'finals' to our present position, John Grant concluded with a summary replay of the plan: 'Now, the descent we'll take about 50 miles after Pecky and if the weather is clear and we can see this and this (pointing to one of the outlying islands and Porto Santo), and if we're cleared down to 3,500ft and we can see the field, then I'll come on down and aim to go straight over the beacon, dirty it up, round and straight in for a visual. Or if we're on here (runway 24 instead of 06), I'll go straight in for a visual, subject to being able to see it in time. They do have a habit of pulling you into the beacon if there's any other departing or landing traffic, which is one of the reasons we like a little extra fuel here. The diversion will be Porto Santo, no great problem — also only a beacon letdown. The Funchal runway looks longer than it is on the 06 approach because of the up-slope and, by

### Air Europe Boeing 737-200 fleet

		dte	se/d
G-BMHG	Adam	27 Mar 79	04 May 79
G-BMOR	Eve	02 May 79	11 May 79
G-BMEC	Joy	31 May 79	08 Jun 79
G-BJFH	Sandy	17 Mar 80	26 Mar 80
G-BMSM	Roma	27 Mar 80	02 Apr 80
G-DDDV	Peggie	Mar 81	Apr 81
G-BRJT	Louise	Mar 82	Apr 82

dte: date title exchanged  
se/d service entry date of first commercial passenger flight





the same token, the glidepath can look too high... any questions?

There were none: the 10 minutes' briefing had surveyed all the possibilities. It was then 11.06hrs BST, and Andy Lothian made another scan round the instruments. Clicking the navigation computer display switch to show the wind reading resulted in news of a 101kts 'blow' from 288°, ie from 60° or to starboard of the nose; we were going to be loosing a few more minutes from our ETA. However, it seemed we were better set up than friendly voices some way behind who could be heard in contact with Lisbon ATC.

**AE606** 'Good morning sir, Air Europe Six Zero Six is Demos at one zero, level two seven zero, and requesting flight level three seven zero, and estimating Asmar at three seven.'

**ATC** 'Air Europe Six Zero Six, Roger, three seven zero not available at present, expect after passing Asmar.'

**AE606** 'Air Europe Six Zero Six — Er, what is the traffic at three seven zero?'

**ATC** 'We don't have traffic at three seven zero. There is traffic behind your flight and traffic ahead at three three zero, but — like your flight — they are not in radar contact and I need to see your flight in radar coverage. Standby please.'

**AE606** 'Roger'

The pleas for a more realistic altitude had been emanating from Air Europe's Manchester Funchal flight that morning: John had recognised the voice of the copilot, Atholl Buchan, and decided on an air-to-air inject of company condolence.

**P1** 'Big Atholl?'

**AE606** 'Hello?'

**P1** 'Never mind mate!'

**AE606** 'Let's switch frequency?'

**P1** 'You do sound fed up'

**AE606** 'Hello, who's that?'

**P1** 'John Grant; are you with Dave Bromley?'

**AE606** 'That's affirmative.'

**P1** 'We're at three three zero and very comfortable!'

**AE606** 'Thanks a lot, we've been stuck down at two seven zero since Quimper.'

**P1** 'It couldn't happen to a nicer chap!'

**AE606** 'What time are you estimating Funchal?'

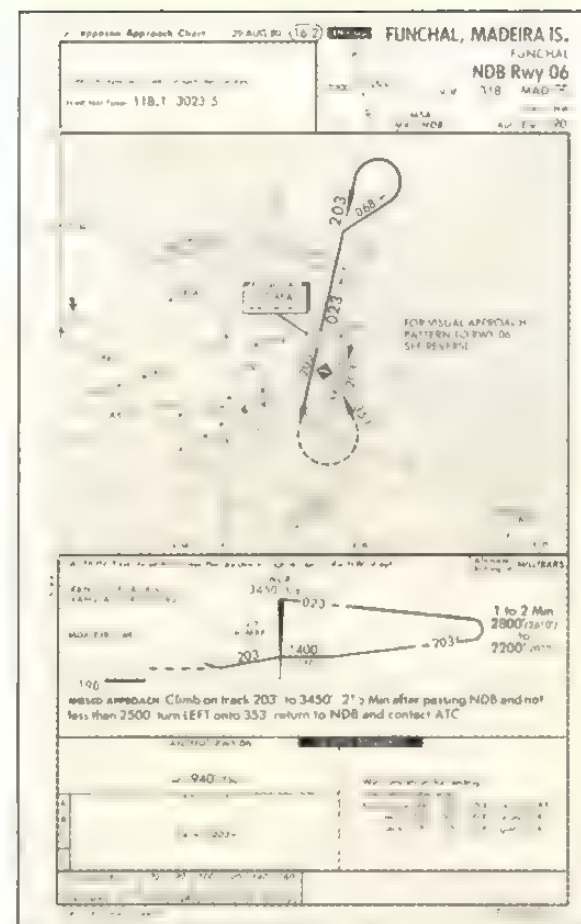
**P1** 'Five past eleven.'

(ie 11 05hrs GMT/12 05hrs BST)

**AE606** 'That's 45 minutes ahead of us — think you can hack it? The wind's not too strong for you up there?'

**Left:** A portion of the Jeppesen High Altitude Enroute Chart E(HI)6 showing airway Upper Red 1 between Santiago, Spain and the Madeira TMA via the reporting points at Damos, Asmar, Veram and Pecky.

Copyright 1979 Jeppesen Sanderson Inc



**Above:** The Jeppesen approach chart for runway 06 at Funchal.

Copyright 1980 Jeppesen Sanderson Inc

**Above right:** Plan of the airport layout at Funchal with, inset, the approach path to runway 06.

Copyright 1978 Jeppesen Sanderson Inc

Laughter spanned the 300 mile distance between our respective positions on Upper Red 1, and we eventually left '606' to their prospect of renewed elevation after Asmar.

During the next half hour the crew's en route routine was enlivened by a visit from one of the passengers who, it turned out, had been an RAF Dakota pilot during WW2: the appearance of the flightdeck prompted the inevitable 'quite a change from my day' reminiscences but that apart, the conversation about flying provided its customary bond of shared experience.

One hundred and twenty miles out from Porto Santo and John Grant established contact with Funchal:

**P1** 'Funchal Approach, Air Europe Six Seven Zero, good morning.'

**F** 'Air Europe Six Seven Zero, good morning sir.'

**P1** 'Six Seven Zero, we're estimating field on the hour, request your runway in use.'

**F** 'Air Europe Six Seven Zero, Roger: wind is calm, I suggest you use runway zero six to take advantage of the uphill.'

**P1** 'That's fine sir, and the weather please?'

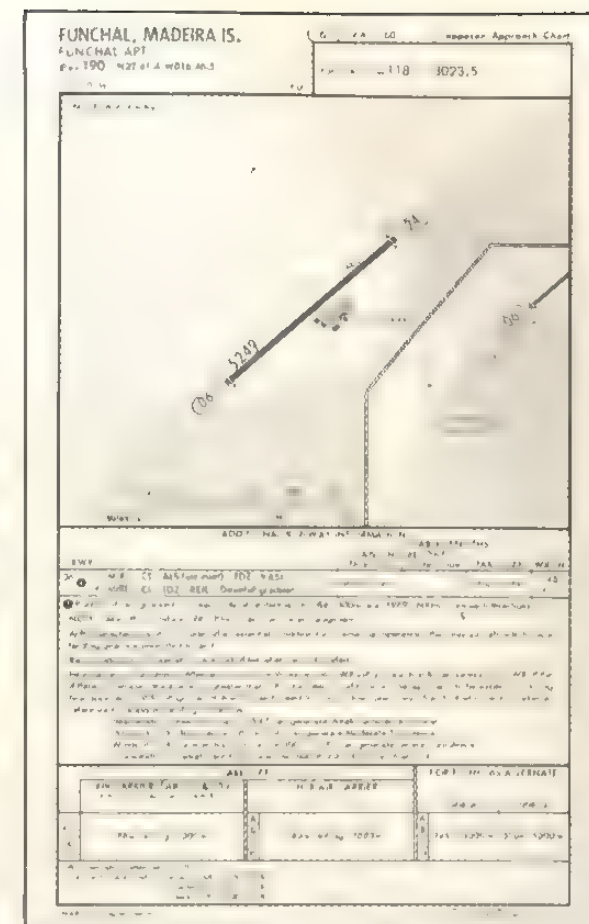
**F** 'Present weather — 1 octa cumulus at 600 metres, two zero kilometers, QNH 1017, ground temperature two zero.'

**P1** 'That's copied sir: will call you when we leave three three zero.'

**F** 'Thank you very much.'

A few minutes' reflection: 'Humm... twenty degrees', mused John, 'and it looks as though the cloud is breaking up south of here. I'll have a word with the passengers'.

He started to speak on the PA: 'Ladies and Gentlemen, the Captain again. The position now is 131 miles from Madeira; the weather there is very nice and the wind is calm. There is a minute amount of cloud over the island; the temperature is 20°C and we should be landing at about five past twelve subject, of course, to air traffic control. I don't know if any of you have been to Madeira before but just for your



information the airfield runway is a little bit shorter than average so we brake rather heavily after landing. It's quite safe but just to let you know that the brakes come on harder than usual — there's nothing wrong, it is just the normal procedure to ensure that we stop nice and safely. We will be going down in approximately five minutes' time; as we come in you should

### Air Europe routes (summer 1980)

**From:** Gatwick, Manchester, Leeds/Bradford, Newcastle, Cardiff, and Bristol  
**To:** West Germany-Munich  
Gibraltar  
Greece — Athens, Corfu, Heraklion, Kos, Rhodes  
Malta  
Italy — Alghero, Bari, Catania, Lamezia-Terme, Milan (Malpensa), Naples, Olbia, Pisa, Rimini, Venice  
Portugal — Faro, Madeira Funchal  
Spain — Alicante, Almeria, Barcelona, Mahon, Malaga, Ibiza, Palma-Majorca, Tenerife





see the island on the right hand side and then, on final approach, those on the left will get a very nice view of the high ground away to our left — the mountain in the centre of the island is just over 6,000ft high\*.

A member of the cabin crew came on to the flightdeck to mention that a wheelchair would be needed for one of the passengers and John relayed the request to the TAP (Air Portugal) office at Funchal. Then it was time for a quick captain's recap before starting the descent checks: 'So, the threshold speed ( $V_{AT}$ ) we have bugged at 126kts and we'll come in about 15kts above that. The landing weight will be 43,900kg and fuel remaining, 4,700kg. QNH we have — 1017, temperature 20°C, QFE we haven't got yet but we expect 1010'. He had explained earlier that the crews always cross-check the flight plan millibar difference between QFE and QNH in relation to the airfield elevation\*. But because of undulations in the airfield topography at Funchal, 'if they give us a touchdown QFE it will only be about 5mb difference on QNH whereas if they give us an airfield QFE it will probably be 7mb less than QNH'. In this instance, as we would not be doing an ILS approach, the minor variation would not be important; the significant number on the approach would be the decision height — 630ft QFE.

\* The air pressure reading encountered at sea level is decreased by about 1 millibar for every 30ft increase in altitude (the normal value at sea level is approximately 1013mb). An altimeter zeroed to the QNH setting for mean sea level pressure reads the aircraft's altitude whereas one set to the QFE pressure reading on the airfield (or more specifically, the runway) will read the aircraft's height above ground level at the destination. So the difference between the two pressure readings, QNH and QFE, ie the millibar difference, multiplied by 30 should cross check to the airfield elevation in feet.

Now we knew the runway, how would the curved approach path be flown to 06?

'Well it will depend on the wind and how the approach is looking,' replied John; 'We'll probably come off the downwind leg at about 175kts and when I'm happy we'll come back to  $V_{AT}$  + 15kts, 140kts approximately, on the last bit. If it was very turbulent we'd set up the landing configuration good and early and personally I would have it 20kts above the bug speed to cope with windshear. Obviously you can afford to cross the threshold with some speed margin, the maximum is bug plus 15, as the aeroplane stops very quickly under auto-braking.'

Almost immediately thereafter it was into the descent checks... 11.53hrs BST; Andy Lothian responded to the call.

'Seat belt sign is on; anti-ice is off; air conditioning and pressurisation is starting to go down and I've set 1017 — Instrument checks.'

'Point seven three five Mach, two sixty three knots,' intoned John. 'I've got one degree nose down, wings level, thirty-two thousand three hundred feet... now! VSI coming up to twenty-five hundred feet a minute... now! EPR two oh seven please, and I've got one two six knots set. We're hoping for a visual as we briefed and it looks like we'll get it too.'

'Checks complete.'

'And we won't go below 8,500ft as briefed until we're visual,' added John.

It was descending through 19,000ft that we first spotted Funchal, a smudge of land emerging from beneath the cloud over the centre of the island. The Captain pointed out some of the geography. 'The first time I came through here I thought that island over there (the outermost one in the Madeiras) was a storm. It's not marked on any of the charts — worth remembering that one Andy!' Beyond the island in question we could see Porto Santo and 26 miles further ahead was the eastern tip of Funchal, the site of the NDB on which we were homing.

Left: The visual approach to runway 06 at Funchal.

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- FT** 'Air Europe Six Seven Zero, your present altitude and flight conditions?'  
**P2** 'Six Seven Zero, Roger; we are Victor Mike Charlie, passing flight level one one zero and we have the field in sight'  
**FT** 'Roger Six Seven Zero, you may proceed under Victor Mike conditions. Report reaching three thousand five hundred feet field in sight, runway in use zero six, wind is calm QNH 1017'  
**P2** 'Roger, QNH 1017, call you at three thousand five hundred feet, we have the field in sight'  
**FT** 'Roger report on downwind and call you for visual approach to runway zero six'  
**P2** 'Six Seven Zero, Roger'

We looked at the oncoming easterly peninsula, with its 755ft spot height on the left-hand end, and the rising slopes of the island around the bay in the background. The airport runway looked the size of a cricket pitch, lying traverse on a rocky epaulette.

'I can see the banana factory', announced Andy, referring to the white packing shed that forms one of the conspicuous aiming points on the approach path.

'We'll go down to 3,500ft initially,' indicated John, 'then we'll slow it down — weather radar off please. One of the problems with this aeroplane is slowing it down — it's so clean.'

The crew double checked the QNH setting of 1017, the identification of the beacons on the radio magnetic indicators (RMI), and watched the speed of the aircraft — 230kts, and evidently not decelerating quite as quickly as John would have liked.

'One flap please.'

'One flap coming down', confirmed Andy.

The call for 'two flap' came almost immediately and then 'five flap' ten seconds later. Now the flightdeck resounded to the stabiliser trim wheels grinding out repeated correction of the aircraft's attitude, the adjusted incidence of the tailplane damping the nose-up pitch changes caused by the flap selections.

'Altimeters.'

'Ten seventeen, passing five three.'

'Going down to 3,300ft on QFE.'

'Three three on QFE,' rhymed the co-pilot.

'Undercarriage down please.'

'Gear down, and we're just across the beacon.'

'Call downwind now.'

Andy Lothian contacted Funchal to

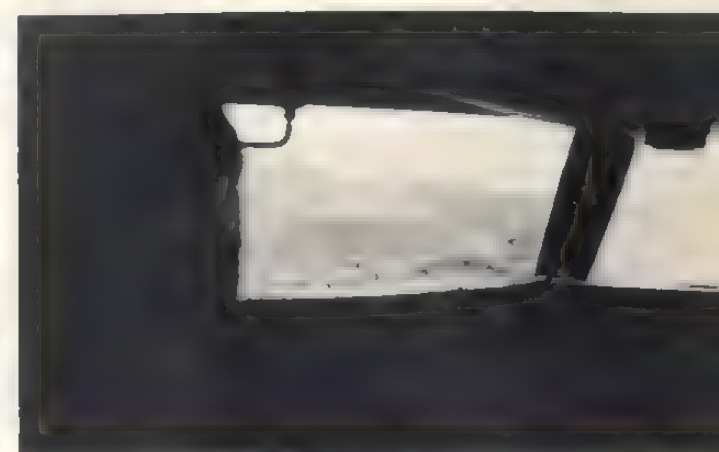


Left: Running up to the curved approach path to runway 06 at Funchal with the airport visible just to the left of the window frame beyond First Officer Andy Lothian.

Below left: Turning finals and coming off the curved approach, the Funchal runway straightens ahead of the aircraft.

Below: An over-the-shoulder view past Captain John Grant and showing the platform-like structure of the airport with half a mile to run. The terminal area can be seen off to the right about half way down the length of the airfield.

Photos: Martin Horseman



advise 'the Air Europe Six Seven Zero' was downwind.

'Cabin secure!' reported one of the stewardesses — an unhurried 'Thank you, dear' from John.

The aircraft banked on to the reciprocal of the active runway and flew parallel to the coast, encountering an occasional chop from the winds blowing offshore. A shade more power, holding 3,600ft, and further ups from the left hand seat:

'That hotel's quite a useful landmark on the approach to 24... there's your banana factory, Andy — see it?.. we're going to have to keep inside this bit of clag.' An errant patch of cumulus began to occupy the left front sector of our view.

'Give me Ten Flap will you please.'

'Ten Flap running' said Andy as he re-hatched the selector lever.

John manoeuvred the 737 on to the base leg, continuing the turn over the sea through a good 120° or so in order to get the aircraft obliquely aligned to the coast and thus to avoid a larger turn off the base leg, where we would be closer to the rising ground.

'Fifteen Flap now.'

'Fifteen Flap running... fifteen flap is on.'

'Check.'

We were pointing at the end of the curved line approach lights starting near the banana shed at Gelo. The flaps were wound out successively to the full 40° and, right wing down for the turn on to the runway heading, the aircraft began to encounter increasing turbulence. On to the one mile final with a few vicious kicks from the Rosario valley downdraughts demanding John's forceful correction of the roll movements they induced. At a half mile the turbulence died away and the approach continued in much more settled air. The VASIs glowed nicely for a correct glideslope, red over white, and John had the aircraft a shade left of the centreline to offset the residual crosswind. From this angle, the flattened, grass covered mound of the airfield now looked like an elongated billiard table. The land jumped up the cliff to the threshold, we flared into a firm touchdown and the restraint of the harness quickly signalled the auto-braking; reverse

thrust was applied and the roll-out slowed to a stop about half way between the apron turn-off and the 24 threshold. An about-turn to taxi back along the runway and off down the taxiway into the apron fronted by the terminal buildings.

'Brake pressure is good' announced Andy as the aircraft came to a stand and a start was made to shut down checks.

We had landed at 12.11hrs BST, and after the 3hr 5min outbound there would now be a welcome 45 minute break before the flight became Air Europe 671 to Gatwick.

(To be concluded in next month's issue)

# Glossary

<b>ATC</b>	air traffic control
<b>ETA</b>	estimated time of arrival
<b>FT</b>	Funchal tower
<b>MSH</b>	minimum safety height
<b>NDB</b>	non-directional beacon
<b>P1</b>	Captain (first pilot)
<b>P2</b>	First Officer (second pilot)
<b>TDZ</b>	touchdown zone (lights)
<b>VASI</b>	visual approach slope indicators
<b>VAT</b>	velocity at the runway threshold





## airview

Peter R. March

### Ski-jump at Yeovilton and . . .

At a ceremony at Yeovilton on 26 February the Royal Navy's new Sea Harrier dummy deck and ski jump was officially opened by Lady Eberle, wife of the Commander-in-Chief Fleet. This unique facility for training Sea Harrier pilots was completed in just under 12 months at a cost of over £4 million and was designed by British Aerospace. It features a concrete runway and ramp 18m wide and 96m long; the ramp section was constructed to a complex vertical curve to tie in with the levels of the steel ramp which is hydraulically adjustable from 7° to 15°. The concrete dummy deck covers an area of 27m by 57m and provides a hover and landing deck. A sunken visual control building adjacent to the ramp houses all the necessary equipment for communications, lighting and ATC. Situated south-east of the main runway the dummy deck and ski-jump will provide Yeovilton with its third operating area, making this airfield one of the most complex air traffic control units in the UK; with Sea Kings, Wessex and Lynx doing VTOL work north of the runway, Sea Harriers STOL south, and Airwork Hunters and Canberras making conventional circuits using the runway itself.

### . . . third Sea Harrier Squadron formed

The first aircraft to use the new ski-jump after the inauguration was Sea Harrier FRS1, XZ493, of No 801 Squadron which had been commissioned shortly before. Commanded by Lt Cdr Nigel Ward, No 801 Naval Air Squadron is the third of

four Sea Harrier squadrons to be based at Yeovilton. It will be equipped with five aircraft and will embark on HMS *Invincible* in mid-1981 with the primary role of air interception and secondary roles of reconnaissance and strike.

No 801 Squadron is one of the Fleet Air Arm's earliest units, having been formed on board HMS *Furious* in April 1933 equipped with Fairey Flycatchers. These were soon replaced by Hawker Nimrods and Ospreys when it was based at RAF Netheravon the following year. At the outbreak of WW2, No 801 Squadron was flying Blackburn Skuas from HMS *Furious* and spent a busy two years mostly involved with dive bombing and attacks on enemy shipping. It became a fighter squadron in August 1941 when it re-equipped with Sea Hurricanes at Lee-on-Solent, going to sea on HMS *Eagle* until disbanded a year later when the carrier was lost.

On 7 September 1942, No 801 Squadron became the second FAA unit to operate the Seafire and it took the new aircraft on board HMS *Furious* once again, remaining with the carrier for over two years. Its final war-time carrier was HMS *Implacable* in which '801' sailed to the Far East on 6 December 1944 to take part in the air attacks against Japan. The squadron remained with the carrier until disbanding on 3 June 1946. Twelve months later No 801 was back in commission this time as the first Sea Hornet squadron and then conducted most of the early trials with this aircraft until going on board HMS *Implacable* once again before transferring to HMS *Indomitable* in 1951. Returning to the Far East in June 1952 on board HMS *Glory*, by which time No 801 had re-equipped with Sea Fury FB11s, the strike squadron took part in the Korean war. Two years later '801' was paid off when HMS *Glory* was withdrawn.

It was not until 1959 that No 801

**Above: The commissioning ceremonies for No 801 Squadron at RNAS Yeovilton on 26 February — Lt Cdr Nigel Ward is reading the Commissioning Warrant and behind him is Sea Harrier FRS1, XZ496/002. Photo: Peter R. March**

Squadron moved into the jet age, when, for a brief period, it flew Sea Hawks from HMS *Centaur*. In 1962 it reformed at Lossiemouth as the first operational Buccaneer squadron, a type which it flew for the next 10 years embarked on the carriers HMS *Ark Royal*, HMS *Victorious* and finally HMS *Hermes*, until it disbanded as a result of the 1972 defence cuts. It is very appropriate that this historic Fleet Air Arm squadron should be chosen as one of the trio of units to fly the Navy into the new era of fixed wing operations on board the new generation of *Invincible* class carriers. The winged trident badge of No 801 Squadron is now back in the air boldly emblazoned on the tails of its new Sea Harriers. At the time of the commissioning ceremony two of the five aircraft were on squadron strength: XZ493 001/N and XZ496 002/N.

Footnote: The Sea Harrier squadron and code allocations to the two earlier squadrons have been: XZ451 100/VL, XZ452 101/VL, XZ455 102/VL, XZ456 103/VL, XZ457 104/VL, XZ453 105/VL all to No 899 Squadron, and XZ454 250/N (written off 1 December 1980), XZ458 251/N, XZ459 252/N, XZ460 253/N, XZ492 254/N to No 800 Squadron.

### Mainly civil

Splendid news from Stansted in mid-March was the arrival of Bristol Freighter 31, ZK-EPH, for the newly formed Instone Air Line. This veteran prop-liner took 86hr 10min to fly from New Zealand, in 13 different stages crossing Australia, New Guinea, Singapore, India, Dubai and along the north Mediterranean, touching

**Right: Spencer Flack's Spitfire XIVc, G-FIRE, lifts off from Elstree in the hands of Ray Hanna on 28 March, for its first flight after restoration. G-FIRE had yet to be painted in the striking overall bright red colour scheme in keeping with the rest of the owner's fleet of display aircraft. Photo: Peter R. March**

down in the UK just before 18.00hrs on 13 March. This Freighter 31M was the 196th Type 170 built (c/n 13218) and was the first flown in 1955 as G-18 194. It was delivered to the RNZAF on 16 March 1955 as NZ5912 to replace NZ5905. Like the earlier aircraft it was fitted with dual controls. In nearly 25 years of service it has accumulated only 13,000 flying hours. Captain Scott who flew it back to the UK commented that it had performed very well on the long journey, with only some minor problems with propellers en route.

Instone Air Line, a famous name in the history of commercial aviation in this country, plans to commence crew training immediately at Stansted with a view to starting operations in the spring, using the Freighter to carry bloodstock between France, Eire and the UK. The company has options on two further RNZAF aircraft and if all goes well these will be brought in to supplement the first machine. The original airline operated surplus WW1 types such as the Vickers Vimy from 1919 until it was absorbed into Imperial Airways in 1924. The founder of the airline was at Stansted together with Giles Instone, one of today's directors, to see the Freighter arrive.

Other airline news this month includes the announcement by Eastern Airways of Humberside that it has been awarded its first scheduled passenger route from its home base to London-Heathrow. As Dakotas are considered too slow for the high density traffic pattern of Heathrow, the company will initially use Navajos but has ordered two Shorts SD330s, the first for delivery in July and due to enter service in August. The SD330 has been slow to take off with UK domestic airlines but following the Alidair order in January its potential is clearly being seen and further orders can be expected.

Another rapidly expanding company is Colt Executive Aviation at Staverton, Glos. Formed by the Colt Car Company (Mitsubishi) for company and charter operations it has a mixed fleet comprising Aztec, G-SATO; Rockwell Commander

**Right: A most notable aircraft to return to the UK after a long spell abroad was Bristol Type 170 Freighter, seen on arrival at Stansted on 13 March after a 13-leg flight from New Zealand. The Freighter will be operated by Instone Air Line (a great name from the past) to transport bloodstock. Photo: BAe Filton**



690B, G-JRMM; King Air 90, G-STYR (soon to be replaced by a King Air 200 presently registered G-BILY); and AS350B Ecureuil, G-MORR. On 25 February Colt took delivery of a second Ecureuil, G-PORR, from McAlpine Helicopters. The registrations on the fixed wing aircraft all derive from the initials of the car company's UK directors, while the helicopter registrations are from Michael ORR the managing director and Pat ORR his wife — certainly a very personalised fleet of aircraft!

Also very much a personal fleet but of a quite different kind is Spencer Flack's collection of air display types. In their striking red colour scheme Sea Fury, G-FURY, Jungmeister, G-AXMT, and Hunter 51, G-HUNT, have already cut an impressive dash at 1980 airshows. This year the latest addition Spitfire XIVc, G-FIRE, will be joining the circus. This ex-Belgian (NH904) veteran was flown for the first time after its rebuild at Elstree on 14 March in the hands of ace Spitfire pilot Ray Hanna and such was his confidence in the aircraft that he was soon putting it through his characteristic manoeuvres over the Hertfordshire airfield. Flown

without any registration markings and in undercoat bar the rudder and spinner, G-FIRE is to be painted in Spencer Flack's customary fiery red scheme. Look out for it at airshows this summer.

Another air display pilot who is building up an impressive fleet of interesting aircraft is Lindsey Walton. Well known for his appearances with Nord Pingouin, G-ATBG, he has now added MS733 Alcyon, G-SHOW, which is to be painted in the colours of an African air force, and a rare Stearman coupe which has recently arrived from the USA. This latest aircraft adds to the growing number of these Boeing biplanes in the British Isles — G-AROY at Little Gransden, G-AWLO at Blackbushe (arrived August 1967 and not flown until 2 October 1980), G-AZLE at Manor Farm, Tongham, G-BAVN at Sandown, G-BAVO at Speke, G-BHUW at Speke and G-ROAN at Tattershall Thorpe. Also static relic CF-EQS at Duxford. While on the subject of veteran biplanes it is reported that Naval Aircraft Factory N3N-3, EI-BEY, is back in airworthy shape again at Shannon and should be performing at air events in Ireland this summer.





## Wellesbourne Mountford

The former RAF station at Wellesbourne Mountford near Stratford on Avon was officially opened by HRH the Duke of Edinburgh on 13 March as a 'new' civil airfield operated by Smith Aviation Services. Wellesbourne Aerodrome as it is now known has remained in limited use since the RAF left in 1964, but it is only since July 1980 that the former Shobdon-based company took over the operating side. It is the culmination of over three years work to set up a totally new aviation centre to serve the 'Heart of England'; and it could not have come at a more appropriate time with the possible closure of Coventry Airport in prospect if the bid for the new Datsun car factory is successful. Smith Aviation Services intend to provide air charter, aircraft sales and servicing, private and club flying and a school of flying as soon as the facilities permit.

## Round and about

Balair's famous Douglas DC-6A, HB IBS, the last of the Douglas four-engined transports to be operated on regular passenger services into the UK, has been given a new lease of life during the winter and will continue to fly to and from Gatwick this summer. It will also be available for charter by enthusiasts and other groups keen to fly in one of yesterday's transports.

At the time of writing news of the arrival

of the second Sandringham to return from the Caribbean was imminent. N158J 'Excalibur' was expected to land in the Solent to make a stop-over on its way to Marseilles. No announcement has yet been made whether this flying boat will return to the UK to operate later in the year as originally indicated.

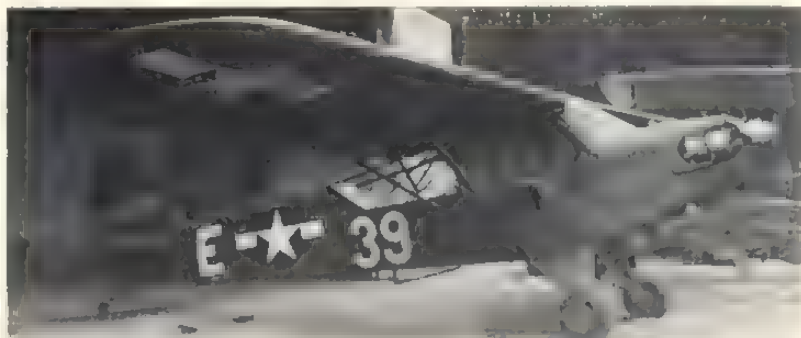
With the air show season rapidly approaching, work on preparing new exhibits and giving some older ones a 'brush-up' is proceeding apace. At Compton Abbas on a cold February day Piper J3C-65, G-BCXJ, emerged from the paint shop for the first time in its new US paint scheme. It now carries the serial 413048 and is drab olive overall. At Southend Harvestair is working on the damaged Fokker Dr VIII to get it airworthy for the new season as part of the Leisure Sport display team. At Walkenridge Farm Cliff Lovell was busily rebuilding Tiger Moth, G-ANDM, in February, having previously been stored. Imported Great Lakes, G-BIIZ, was the centre of interest with Personal Plane Services at Booker during the same month and at Popham Norecrin, G-BHXJ, was receiving attention to make its flying debut this summer.

Prestwick has had its usual passage of interesting aircraft. On 7-8 March, P-3A

Orion BuAer No 152143 of VP 64 Willow Grove, Pa, a US Navy Atlantic Reserve Patrol Squadron came in, preceded by C-130A Hercules, 57-0471, of the Delaware ANG on 6 March. Deliveries have included No 724, a Twin Otter to the French Air Force on 7 March. Westwind VH IWW, Falcon 10 N244FJ and finally CC137, 13703, to the CAF in Germany all on 4 March.

**Addendum:** In listing the Lynx HAS2 flights of No 815 Squadron last month reference was made to the new *Ambuscade* Flight (F172) but inadvertently the aircraft serial was omitted — it should have read XZ721 (323/AB). HMS *Battleaxe* has been allocated a second Lynx, XZ725 (403/BX). So far No 815 Squadron HQ Flight allocations have been XZ230 (751/VL) and XZ723 (753/VL).

For some of this month's contributions we would like to thank: A. J. Brown, D. Conway, G. Finch, J. Guthrie, A. March, I. MacFarlane, D. F. Ogilvy, E. A. Shackleton, R. Wright and BAe Photographic Services (Filton). Also the publications *Air North*, *Air Scotland*, *Air Strip*, *Aviation Ireland*, *British Aviation Review*, *Flypast*, *Humberside Air Review*, *Irish Air Letter*, *Prestwick Airport Letter*, *Scottish Air News*, *Skyward* and *South West Aviation News*.



Right: Piper J3C65 Cub, G-BCXJ, emerging into the February gloom at Compton Abbas on 27 February and displaying a new US wartime paint scheme and serial, 413048.

Below: Balair's DC-6A, HB-IBS, a regular visitor to Gatwick, will continue in service this year after a winter overhaul. Photos: Peter R. March



Right: A busy scene on the operational apron at Greenham Common during last year's Newbury Air Festival, as Beech 18, N96240, taxis-out to take-off. The main theme for the 1981 International Air Tattoo is a Sea Search Meet. This competition for maritime patrol and SAR aircraft and helicopters, will take place over the preceding four days to the opening of the base to the public on 27-28 June (during which the Sea Search aircraft will be on static display). Photo: Andrew March



- 24-25 HM Naval Dockyard, Chatham, Kent: RN Navy Days
- 25 Henlow, Beds: RAF Gala Day
- 25 Long Marston, Warks: Air Display
- 28 Portland, Dorset: HMS *Osprey* Families Day
- 28-31 Lulsgate, Avon: Hannover Flying Club Fly-in to Bristol
- 30 Waddington, Lincs: RAF Open Day
- 30 Honington, Suffolk: RAF Open Day
- 30 Cheltenham Race Course: 1981 Colt Car Helicopter Challenge Cup Event
- 31 Old Warden, Beds: Shuttleworth Flying Day
- 31 Barton, Gtr Manchester: Manchester Air Show

## June

- 5-7 Gamston, Lincs: Air Fair
- 6 Prestwick, Strathclyde: Scottish International Air Show (inc HMS *Gannet* Air Day)
- 6 Old Warden, Beds: Shuttleworth Flying Evening
- 6-7 Henstridge, Somerset: PFA Training Weekend
- 6-7 Furness, Co Kildare: Dublin Ballooning Club Summer Get Together
- 6-7 HM Naval Dockyard, Rosyth, Strathclyde: Navy Days
- 7 Fimmere, Bucks: Vintage Aircraft Club Fly-in
- 7 Isle of Man: Red Arrows Display at TT Races (and 9 June)
- 7 Gowran Grange, Co Kildare: Leinster Aero Club At Home
- 12-14 Newcastle, Tyne & Wear: Northumbria International Air Rally
- 13 Fleetlands, Hants: RNAY Open Day
- 13 Halton, Bucks: RAF Open Day
- 13 Brighton, West Sussex: Red Arrows Display
- 14 Duxford, Cambs: IWM Vintage Flying Day
- 14 Bandon, Co Cork: Air Display and Fly-in
- 14 East Fortune, Lothian: Museum of Flight Open Day
- 14 Church Fenton, North Yorks: SSAFA Air Display
- 14 Shotteswell, Oxon: Vintage Aircraft Club Midsummer Picnic
- 20 Sleaf, Salop: BAeA Golding-Barrett Trophy
- 20 Aberdeen, Grampian: Red Arrows Display
- 21 Tollerton, Notts: Nottingham International Air Display
- 21 Liverpool, Merseyside: Red Arrows Display
- 24 Penzance, Cornwall: Red Arrows Display
- 24 Calne, Wilts: IAT Sea Search Helicopter Competition at Bowood House
- 27 Woodford, Cheshire: RAFA Air Show
- 27-28 Greenham Common, Berks: International Air Tattoo 81
- 28 Old Warden, Beds: Shuttleworth Flying Day
- 28 Shepton Mallet, Somerset: Wings and Wheels Rally & Show

## July

- 4 Old Warden, Beds: Shuttleworth Flying Evening
- 4 Locking, Avon: RAF Flowerdown Fair
- 4 North Luffenham, Leics: RAF Fete
- 4-5 Leicester East, Leics: PFA International Air Rally
- 5 Chicksands, Oxon: USAF Families Day
- 5 Hull, Humberside: Red Arrows Display
- 10-12 Isle of Man: International Air Rally
- 11 Old Warden, Beds: BAeA Air Squadron Trophy
- 11 Plymouth Hoe, Devon: Air Display
- 11 Exeter, Devon: RAFA SW Air Display
- 12 Old Warden, Beds: Air Britain International Fly-in
- 12 Popham, Hants: Biplane Fly-in
- 12 Lakeland, Cumbria: Red Arrows Display
- 12 Holbeach St Johns, Lincs: Strawberry Fly-in
- 13-14 Strathallan, Perth: Historic Aircraft Collection Sale
- 17 Abbeyshrule, Co Longford: Homebuilders Fly-in
- 18 Lee on Solent, Hants: RN HMS *Daedalus* Air Day
- 18 Upper Heyford, Oxon: USAF Open Day
- 18 Silverstone, Northants: Red Arrows Display
- 18-19 Bournemouth-Hurn, Dorset: Bournemouth Air Pageant
- 18-19 Portland Naval Base, Dorset: RN Open Days
- 19 Badminton, Avon: Badminton Air Day
- 19 Lyme Regis, Dorset: Red Arrows Display
- 19 Weston Park, Salop: Air Display
- 22 Aberystwyth, Gwynedd: Red Arrows Display
- 23 Eastbourne, West Sussex: Red Arrows Display
- 24 Hastings, West Sussex: Red Arrows Display
- 25 Lossiemouth, Grampian: RAF Open Day
- 25 Thorpe Park, Surrey: Leisure Sport Air Day
- 26 Old Warden, Beds: Military Flying Day





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- 26 Bodmin, Cornwall: Air Day
- 29 Culdrose, Cornwall: RN Air Day
- 29 Swanage, Dorset: Red Arrows Display
- 30 Weston-super-Mare, Avon: Great Weston Air Day
- 30 Taunton, Somerset: Red Arrows Display
- 31 Bournemouth, Dorset: Red Arrows Display

## August

- 1 Yeovilton, Somerset: International Air Day
- 1-2 Castlebar, Co Mayo: Mayo Fly-in
- 2 Fairoaks, Surrey: Air Display
- 2 Duxford, Cambs: IWM Military Show
- 7-9 Newtownards, Co Down: Ulster International Air Rally
- 8-9 Abbeyshrule, Co Longford: Fly-in and Air Display
- 9 Popham, Hants: Auster Fly-in
- 12 St Mawgan, Cornwall: International Air Day
- 15 Valley, Gwynedd: RAF Open Day
- 15 Aberporth, Dyfed: Red Arrows Display
- 15-16 Fairyhouse, Co Meath: Air Spectacular 81
- 16 Coventry, West Midlands: RAFA Air Display
- 16 Fairford, Glos: USAF Open Day
- 16 Farranfore, Co Kerry: Air Display
- 17 Whitby, Yorks: Red Arrows Display
- 19 Weymouth, Dorset: Red Arrows Display
- 19 Broadstairs, Kent: Red Arrows Display
- 20 Fowey, Cornwall: Red Arrows Display
- 21 Southport, Lancs: Red Arrows Display
- 21 Skegness, Lincs: Red Arrows Display
- 21-23 Edinburgh, Lothian: Scottish International Air Rally
- 22 Thorpe Park, Surrey: Leisure Sport Air Day
- 22-23 Birr, Co Offaly: Aviation Treasure Hunt
- 27 Chivenor, Devon: RAF Families Day
- 27 Dartmouth, Devon: Red Arrows Display
- 28 Sidmouth, Devon: Red Arrows Display
- 29 Crich, Derby: Transport Extravaganza
- 29 Peterborough, Northants: Red Arrows Display
- 29 Little Snoring, Norfolk: BAeA Thursford Museum Trophy
- 29-31 HM Naval Dockyard, Portsmouth, Hants: Navy Days
- 29-31 HM Naval Dockyard, Plymouth, Devon: Navy Days

- 29-31 Popham, Hants: Microlight Weekend
- 29-31 Finmere, Bucks: Vintage Aircraft Club Summer Camp
- 30 Old Warden, Beds: Shuttleworth Flying Day
- 30 Leicester East, Leics: Air Show
- 30 Isle of Wight: Red Arrows Display
- 31 Halfpenny Green, Staffs: Air Display
- 31 Oulton Broad, Norfolk: Red Arrows Display

## September

- 3-5 Cranfield, Beds: Flight Business & Light Aviation Show
- 4-6 Bristol, Avon: Bristol Balloon Fiesta
- 5 Staverton, Glos: Dowty Air Show
- 5-6 Newtownards, Co Down: Society of Amateur Aircraft Constructors Rally
- 6 Duxford, Cambs: IWM 1981 Air Display
- 12 Abingdon, Berks: RAF Battle of Britain Display
- 12 St Athan, S Glamorgan: RAF Battle of Britain Display
- 12-13 Southampton/Calshot, Hants: Schneider Trophy Commemorative Displays
- 13 Wroughton, Wilts: Science Museum Open Day
- 13 Old Warden, Beds: Shuttleworth Vintage Fly-in
- 13 Popham, Hants: Piper Rag & Stick Fly-in
- 13 Carnmore, Co Galway: Oyster Festival Fly-in
- 17 Jersey, CI: Battle of Britain Display

- 17 Guernsey, CI: Battle of Britain Display
- 18-19 Finningley, Yorks: BAeA White Horse Trophy
- 19 Leuchars, Fife: RAF Battle of Britain Display
- 19 Finningley, Yorks: RAF Battle of Britain Display
- 20-21 East Fortune, Lothian: Museum of Flight Open Days
- 26 Thorpe Park, Surrey: Leisure Sport Air Day
- 27 Old Warden, Beds: Shuttleworth Flying Pageant
- 28-3 October—Kilkenny Castle, Co Kilkenny: 11th Irish Hot air Balloon Championships

## October

- 2-4 Guernsey, CI: Air Rally and Race
- 4 Shotteswell, Oxon: Vintage Aircraft Club Competitions
- 11 Popham, Hants: Vintage Aircraft Fly-in
- 11 Duxford, Cambs: Local Flying Day
- 11 East Fortune, Lothian: Museum of Flight Open Day
- 25 Old Warden, Beds: Shuttleworth End of Season Flying Day

Readers are reminded that the listing is a provisional calendar of events compiled before the start of the season. While every endeavour has been made to ensure its accuracy there will inevitably be cancellations and alterations to details shown above. Confirmation that an event is taking place is essential before setting out to attend. Not all of the events listed are open to the public and you are therefore advised to check on admission with the organisers. There will be regular up-dates of the calendar in the 'airview' diary in succeeding months.

## airevents abroad'81

At the time of going to press, details had been received of the following air events to be held in 1981 and also the display schedule for the USAF demonstration team, the 'Thunderbirds'. Notification of additional shows will appear in the 'airview' column of *Aircraft Illustrated* as soon as further details are available.

## April

- 15 Tyndall AFC, Panama City, Fl, USA\*
- 18 Altus AFB, Altus, Ok, USA\*
- 25 Langley AFB, Hampton, Va, USA\*
- 25-26 Fountain Valley, Ca, USA: Gordon Bennett Balloon Race
- 26 Moody AFB, Valdosta, Ga, USA\*
- 29 Hurlburt Field, Fort Walton Beach, Fl, USA\*

## May

- 2-3 Greenville, SC, USA\*
- 9 Hill AFB, Ogden, Ut, USA\*
- 10 Reese AFB, Lubbock, Tx, USA\*
- 15 Kansas City, Mo, USA: US Aopa regional fly-in
- 16 England AFB, Alexandria, La, USA\*
- 17 Randolph AFB, San Antonio, Tx, USA\*
- 20 Maxwell AFB, Montgomery, Al, USA\*
- 23-24 Coney Island, NY, USA\*
- 25 McGuire AFB, Wrightstown, NJ, USA\*
- 27 Air Force Academy, Co, USA\*
- 28-31 Lelystad, Holland: EAA European Fly-in
- 30-31 Myrtle AFB, Myrtle Beach, SC, USA\*



## June

- 4-14 Paris-New York-Paris air race
- 5-7 Dothan, Al, USA\*
- 5-14 Le Bourget airport, Paris: *XXXIVe Salon International*
- 6-7 London airport, Ontario, Canada: London International Air Show
- 13 Scott AFB, Belleville, Il, USA\*
- 14 Offutt AFB, Omaha, Nb, USA\*
- 20-21 Battle Creek, Mi, USA\*
- 22 Otis AFB, Falmouth, Ma, USA\*
- 23 St Joseph, Mo, USA\*
- 25 Arnold AFS, Manchester, Tn, USA\*
- 28 Bridgeport, Ct, USA\*

## July

- 2-4 Milwaukee, Wi, USA\*
- 5 Duluth, Mn, USA\*
- 11 Plattsburgh AFB, Plattsburgh, NY, USA\*
- 12 Pease AFB, Portsmouth, NH, USA\*
- 14 Point Pleasant, NJ, USA\*
- 16 Madison, Wi, USA\*
- 18-19 Bremerton, Wa, USA\*
- 22 Francis E. Warren AFB, Cheyenne, Wy, USA\*
- 25-26 Dayton, Oh, USA\*

## August

- 1 Bergstrom AFB, Austin, Tx, USA\*
- 1-8 Wittman Field, Oshkosh, Wi, USA: EAA Fly-in
- 2 Carswell AFB, Fort Worth, Tx, USA\*
- 7-9 Abbotsford, British Columbia, Canada\*
- 9-12 Wittman Field, Oshkosh, Wi, USA: US National Explorer Fly-in

## 9-15 Fond du Lac, Wi, USA:

- International aerobatics championships
- 11 Mansfield, Oh, USA\*
- 13 Hancock AFB, Syracuse, NY, USA\*
- 15 Loring AFB, Limestone, Me, USA\*
- 16 Hanscom AFB, Lexington, Ma, USA\*
- 19 Minot AFB, Minot, ND, USA\*
- 22-23 Selfridge ANG base, Mount Clemens, Mi, USA\*
- 30 Cannon AFB, Clovis, NM, USA\*

## September

- 5-7 Cleveland, Oh, USA: Cleveland National Air Show
- 9 Sheppard AFB, Wichita Falls, Tx, USA\*
- 12-13 Topeka, Ks, USA\*
- 18-20 Stead AFB, Reno, Nv, USA: Air races
- 19 Soesterberg AB, Holland: Open day
- 19 Mather AFB, Sacramento, Ca, USA\*
- 20 Edwards AFB, Rosamond, Ca, USA\*
- 23 Louisville, Ky, USA\*
- 26 Dobbins AFB, Marietta, Ga, USA\*
- 27 Columbia, SC, USA\*
- 30-4 October—Tulahoma, Tn, USA: EAA National Fly-in

## October

- 3 Nellis AFB, Las Vegas, Nv, USA\*
- 4 Kirtland AFB, Albuquerque, NM, USA\*
- 7 McConnell AFB, Wichita, Ks, USA\*

## 8-11 Harlingen, Tx, USA: Airsho 81

- Confederate Air Force
- 10 Charleston AFB, Charleston, SC, USA\*
- 11 Eglin AFB, Fort Walton Beach, Fl, USA\*
- 16-17 Yorktown, Va, USA\*
- 18 Shaw AFB, Sumter, SC, USA\*
- 21 George AFB, Victorville, Ca, USA\*
- 25 Lake Charles, La, USA\*
- 31 Beale AFB, Marysville, Ca, USA\*

## November

- 1 March AFB, Riverside, Ca, USA\*
- 7 Williams AFB, Mesa, Az, USA\*
- 8 Norton AFB, San Bernardino, Ca, USA\*
- 11 Vandenberg AFB, Lompoc, Ca, USA\*
- 14 Robins AFB, Warner-Robins, Ga, USA\*
- 15 Patrick AFB, Cocoa Beach, Fl, USA\*
- 21 Homestead AFB, Homestead, Fl, USA\*
- 22 MacDill AFB, Tampa, Fl, USA\*

\* = Thunderbirds display

**Right: The immaculately finished Sopwith Tabloid SS1 replica, 168 — G-BFDE, at Hucknall South for the PFA East Midlands Strut Meeting in August 1980. Photo: Barry Lewis**

**Below: A US Navy Grumman F-14 Tomcat creates a condensation shock wave as it makes a fast flypast (note the angle of wing sweep) during the airshow held at NAS Point Mugu, Ca over 11-12 October 1980. Photo: Frank B. Mormillo**





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